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THE RATE OF INTEREST, THE BANK RATE, AND THE STABILIZATION OF PRICES[1]

SUMMARY

Relative prices and the absolute height of prices. — Interest as a price, 512. — The equilibrium rate of interest is a price; how it is determined, 513. — The absolute height of prices, 515. — The bank rate, 516. — Stability of prices is possible only when the bank rate is the same as the equilibrium rate, 517. — No other device is adequate, 519. — The gold standard does not bring stability of prices, 520. — A manipulated bank rate may mitigate the instability, but with disturbing effects, 521. — Some explanations: special conditions of a progressive society; various kinds of interest rates; how the rate of interest affects prices, 523. — Dynamic as contrasted to static conditions; cyclical movements; futility of mathematical wave theories, 526.

ECONOMIC theory is in its essence a theory of price. Its main function is to explain the whole process by which prices are fixed at their actual heights. It is, therefore, natural that the theory should from the very outset be based on the conception of price. It is not necessary, as the old economists used to do, first to develop a special "theory of value," — usually very difficult to grasp for the student, — and wait until a relatively late stage to introduce the conception of price. In my *Theory of Social Economy* I take the much more direct and simple way of at once introducing an abstract

1. The substance of an address delivered at American Universities in 1928.

unit in which all values are reckoned. The investigation is then from the very start an investigation of prices; we have nothing to do with "values," and we need not trouble our students with those numberless definitions of value that generally lie as stumbling-blocks in the way of a youth eager to penetrate to the actual and central problems of economic life.

When we postulate an abstract unit in which all prices are reckoned, we are able to study all problems concerning relative prices; that is, we can master the whole domain usually comprised under the heading of general economic theory. There remains, however, one essential question to be solved. This question is, how the unit itself is determined, or, in other words, how the absolute height of prices is fixed. This question forms the object of the theory of money, and its solution is in fact the only essential task of this theory.

The rate of interest is a matter of relative price, namely, the price for the right of disposal of a certain amount of capital for a certain time. This definition is formed directly on the model of the business man's habit of looking upon these matters. We pay so many dollars for the right to dispose of one hundred dollars for one year. The sum paid for this right is precisely the rate of interest. On this point science can for once be in complete accordance with practical economics. The theory of interest attains far greater simplicity when the rate of interest is thus from the very outset defined as a price of a certain service. No part of economic theory has suffered more than the theory of interest from the idea that it should be obligatory first to explain the whole economic system in an imagined moneyless society before daring to approach our actual economic life, so essentially based upon the conception of money. Such horrible formulas as "the general overvaluation of

present goods in relation to future ones," which were invented by advocates of a separate theory of value for explaining the phenomenon of interest, were as deficient in scientific stringency as they were unnecessarily difficult for the student to grasp.

The theory of interest as a part of the general theory of prices is capable of being developed in a very elementary form. The function of the rate of interest is, like that of all other prices, to force demand and supply to meet one another. The demand for disposal of capital is always so strong that it would be absolutely impossible to satisfy it if nothing had to be paid for the service in question. Disposal of capital is always supplied in a certain scarcity, and the rate of interest has to compress demand so far that it can be satisfied. This is the fundamental explanation of interest.

If the rate of interest were lower than it actually is, forces would be called forth compelling the rate of interest to rise again to the actual height required for the maintenance of equilibrium. A lowering of the rate of interest would particularly affect the prices of such goods as require much disposal of capital for their production. For instance, house-rents would be particularly strongly affected, because they represent to a great extent payment for disposal of capital. Thus, the demand for housing would be strongly increased, and could not be satisfied without increasing claims being put upon disposal of capital. As, however, the supply of this service is limited, such claims would immediately force the rate of interest to rise again. This is the principle of scarcity.

But we have also to take account of a subsidiary principle, namely, the principle of substitution. If the rate of interest were substantially lower, we could use much more machinery and much more real capital of all de-

scriptions to satisfy the same needs that we now satisfy. We should thereby save much labor and perhaps also other factors of production. Thus a substitution of disposal of capital for these other factors would take place. But this would mean a very much increased demand for disposal of capital, forcing the rate of interest to rise again to its equilibrium level. Further, a lower rate of interest would induce people to make all buildings and constructions and a lot of other things much more durable, naturally at an increased cost for the moment, but with a reduction in the annual cost of the use of these durable goods. This again would be a substitution of disposal of capital for other factors of production, and the effect would be an increased demand for disposal of capital, pressing up the rate of interest. The necessity of paying interest always stands in the way of a technical development which in itself would be very profitable and very advantageous, but which must be restricted within certain limits in order that the claims on disposal of capital should not outgrow the possibility of meeting them.

The rate of interest, on the other hand, has also a certain importance for the supply of capital. Capital is supplied by saving. Some people consume more than they earn, and this over-consumption must be subtracted from the savings of the community before we get to the net savings that form the source from which the whole process of production has to meet its need for disposal of capital. These net savings probably do not vary very much with the usual fluctuations in the rate of interest. Still, the rate of interest is an essential factor for keeping up the supply of net savings at its actual height. At a very low rate of interest — say, one or two per cent — people would not care to accumulate capital to anything like the extent that they actually do now.

Human life is too short to make it profitable for anybody to part with a capital of $100,000 in order to receive a ridiculous rent of $1,000 a year in exchange. It is imaginable that we could do that if we could reckon with living for some hundreds of years. But as our remaining term of life usually does not exceed twenty-five or thirty-three years, we pretend to have something like a twenty-fifth or thirty-third part of our capital as annual interest, if we should abstain from consuming the capital itself. But that is as much as to say that we insist upon having a rate of interest of 4 or, at least, 3 per cent.

We are now ready to proceed to the second part of the great price-fixing problem, namely, the question how the absolute height of prices is determined. The rate of interest that comes to be fixed in connection with all other prices by our system of equations is, as we know, reckoned in so many per cent and does not contain the dimension of money. This rate of interest is, therefore, unlike other prices, absolutely determined by the system of equations, that is, by the conditions of equilibrium of the economic system. The rate is thus independent of the choice of the monetary unit, and it remains the same at whatever height this unit is fixed. This rate may therefore rightly be called the equilibrium rate of interest.

Let us begin with a very elementary observation. If the supply of means of payment valid in our monetary standard were quite unlimited, any price could be paid and prices would continue to rise indefinitely. An indispensable condition of stability is, therefore, that the supply of means of payment should be limited and thus that a certain scarcity in this supply should exist. The absolute height of prices and the purchasing power of the unit of money will indeed exclusively depend upon

this scarcity, in so far as any height of prices and any purchasing power of the unit may be established, provided the supply of means of payment is suitably adjusted. This simple observation is the kernel of the *Scarcity Theory of Money*, as I have developed it since the beginning of this century, and as it is particularly expounded in my *Theory of Social Economy*.

Every monetary system is primarily characterized by the way in which it realizes the scarcity of the supply of means of payment. The simplest case is that where we have a paper currency administered by a central bank. This case also reflects most faithfully the theoretical conditions from which we have started here. In developing our general theory of relative prices we have postulated the existence of a monetary standard; that is, we have postulated a unit in which all prices are reckoned, but we have left aside the question of how this unit is fixed. Now this is precisely the case of the paper standard. It is based on an absolutely abstract unit, and a fixation of this unit is arrived at only by the central bank's regulation of the supply of means of payment valid in the unit. In a paper standard these means of payment primarily consist of the notes of the central bank. The purchasing power of the monetary unit is therefore determined by the scarcity that the central bank chooses to give to its note circulation. Now, the central bank has, of course, several means whereby it is able to restrict its issue of notes. The ultimate and essential means is, however, always the price that the bank charges for its advances, that is, *the bank rate*. If the bank rate is kept too low, other means of restriction will not help: people will find it advantageous to borrow at the bank, and thus the supply of means of payment will swell independently of any restrictions. For the theoretical treatment of the subject we may

therefore concentrate our attention upon the bank rate, and assume it to be the only means by which the bank regulates its note issue.

The question then is: how high shall the bank rate be? By what principles shall the central bank be guided in fixing its rate? The answer is easy enough as soon as we have perceived that there exists a definite equilibrium rate of interest. If the bank rate is lower than this equilibrium rate, people will go to the bank for covering their needs for capital, and the bank will have to issue notes in order to meet such needs. This leads to an unnecessarily large issue of notes, and fresh purchasing power is created without any more goods having been produced, and this increase of nominal purchasing power is bound to force up prices. Thus the result is simply an inflation of the currency.

On the other hand, if the bank rate is kept higher than the equilibrium rate of interest, people will find it profitable to pay their debts to the bank, and thus notes will begin to flow back to the bank and the supply of means of payment will be restricted. The consequence is a reduction of nominal purchasing power and a general fall in prices. What takes place in this case is a process of deflation.

The conclusion from this is clear. Stability of prices is possible only when the bank rate is kept equal to the equilibrium rate of interest. When this is done, the bank does not in any way interfere with the capital market, which is therefore left to find its natural equilibrium. We have here arrived at the exact solution of the central problem of money, and we shall see that this solution immediately clears up the whole series of difficult questions connected with this central problem. There can be no other solution, and other formulas that have been represented as being solutions of the problem of monetary stabilization are theoretically defective.

However, it has to be observed here that our solution does not give the bank any immediate practical guidance for its banking policy. The bank cannot know at a certain moment what is the equilibrium rate of interest of the capital market. The only practical way of ascertaining what is the correct bank rate is, therefore, by observing the results. If, at a certain bank rate, prices are seen to rise continually, the bank may be sure that the rate is too low. Vice versa, when prices fall, the bank may conclude that the rate is too high. The bank has to adjust its rate so that no general tendency either to a rise or to a fall in prices arises. The practical rule is, therefore, that the bank rate should be so adjusted as to keep the general level of prices as constant as possible.

The general level of prices is, however, a statistical construction, and altho we are well aware what is meant by this average, we must admit that it has no absolute theoretical meaning. The practical rule at which we arrive has therefore not quite the same exactness as our theoretical solution of the problem. But the rule is the only one that can be used as a practical guide for the central bank. We must be satisfied with knowing that the exact solution is included in the practical rule. When the bank rate is equal to the equilibrium rate of interest, and no disturbing factors derange the equilibrium, all prices remain constant, and therefore also the general level of prices.

A bank rate that is thus regulated comes as near to the equilibrium rate of interest as it is practically possible to ascertain. With such a bank rate, therefore, the whole economic life is approximately regulated as if the bank rate were at every moment kept exactly equal to the theoretical equilibrium rate of interest. By applying this practical rule, therefore, we secure the highest

possible stability both for the general process of price-fixing and for the whole economic life. In fact, we eliminate as far as possible all the disturbances arising out of deviations of the actual rate of interest from the equilibrium rate. We have seen in the first part of this paper how strong and far-reaching the influence of the rate of interest is, and how it includes every important side of our economic life. We must conclude from this that any deviation of the actual rate of interest from the true equilibrium rate may be the cause of very serious and very widespread disturbances. We have, however, no means of completely discovering these evil effects or of measuring them quantitatively. But they are all the more dangerous for that very reason, and we have every cause to do our utmost to prevent such deviations of the actual rate of interest from the equilibrium rate. This, however, can be done only if the central bank adheres strictly to the rule of maintaining the general level of prices at an invariable height.

Many other devices for the regulation of the supply of means of payment by the central bank have been suggested. Some people contend that the general level of prices ought not to be kept constant, but ought rather to be continually *raised at a moderate rate*. They promise us several advantages from such a monetary policy, particularly a more vivid spirit of progress. But then they entirely forget that the bank rate that would have to be applied for this purpose would be lower than the equilibrium rate of interest. A policy, however, that involves a continual deviation of the bank rate, and therefore also of all rates of interest actually applied in the community, from the equilibrium rate of interest, is a very hazardous policy indeed, involving continual disturbances at all points of the economic life, disturbances which nobody can survey and which we have no

means of controlling. A society conscious of what it was doing would certainly never accept a recommendation of such a very dubious character.

The same must, of course, be said of all other schemes for regulating a paper standard. A continuous fall of the general level of prices, as recommended by some people as a program of justice, is from our point of view equally to be condemned. Again, the idea that cyclical fluctuations of the general level of prices are valuable as a stimulus to enterprise and a tonic for economic health is in itself very vague and dangerous, but is seen to be still more so if we consider all the evil economic effects of the continual falsification of the rate of interest that must be involved in a monetary administration on such lines.

How, then, are we to judge the gold standard from this point of view? The gold standard is, as I usually represent it, nothing else than a paper standard in which the purchasing power of the monetary unit is so regulated as practically to coincide with that of gold. The aim of a gold-standard administration is not to keep the general level of prices constant, but to keep the price of one single commodity, namely, gold, as invariable as possible. If the purchasing power of gold as against other commodities should happen to remain constant, the gold standard is obviously identical with a paper standard regulated according to the principles just laid down. But if the value of gold varies, the gold standard involves a regulation of the purchasing power of the monetary unit in accordance with the variations of that of gold. This is indeed a very artificial and complicated system. It is clear that, in order to bring about such variations, it is necessary to keep the bank rate higher or lower than the equilibrium rate of interest, according to the requirements of the situation of the

moment. Under such circumstances the gold standard involves continual deviations in opposite directions of the actual rate of interest from the equilibrium rate. The disturbing effects of such a policy are obviously quite impossible to survey, and the fact that the world has been persuaded to accept them without resistance can be explained only by the ignorance that has prevailed as to the real effects of the gold-standard system as a disturbing factor in the process by which the true rate of interest is fixed.

Must we then conclude that the gold standard has to be rejected altogether as entirely incompatible with the needs of a rationally regulated social economy? Well, if the value of gold relatively to other goods should continue to fluctuate as it has done hitherto, the answer must undoubtedly be yes. The only condition on which modern society can accept the gold standard is that some means be found whereby it is possible to regulate the value of gold so as to keep gold at a constant purchasing power as against other commodities. For the future, the prospect is that, without such a deliberate regulation of the value of gold, an increasing scarcity of gold will make itself felt, with the result that the general level of prices in every gold standard will be subject to a continual and unlimited fall. It should be possible to prevent this by economizing in the monetary use of gold. Ever since the war I have advocated such a policy of economy in the use of gold. The International Economic Conference in Genoa in 1922 endorsed this policy, which has also later found important expression in the refusal of certain countries to let gold coins enter again into circulation. No doubt it ought to be possible by such means to stabilize the value of gold at its present height, at least for the next few decades. If this is done, the gold standard may be adhered to as a satisfactory

solution of the world's monetary problem as it now presents itself, as determined by the events of history. But if the gold-economizing policy does not succeed, or if it at a future time is found no longer possible to carry through, the unavoidable consequence must be that the gold standard will have to be abolished, and that the world's economy will have to be based on paper standards regulated with the single purpose of keeping the general level of prices constant.

It is a very natural idea that the bank rate must stand in some proportion to the rate of interest of the capital market. Indeed, central banks have long been aware of their duty to watch the movements of the capital market and to adjust their bank rate accordingly. For a hundred years the Bank of England has accumulated experience in bank administration along these lines. Scientific men have also tried to work out the connection between the bank rate and the rate of the capital market. Endeavors have thus been made to put the bank rate in some relation to the profits of real capital. This is, however, a very vague conception and it seems impossible to find an exact definition for it, It must also be observed that profits may be increased, and are very often strongly increased, on the ground that plant is more fully employed. There seems to be no reason why such an increase in profits should affect the bank rate, at least directly. The rate of profits derived from real capital also depends very greatly upon how much money has been spent on this capital, that is, what the cost was when it was constructed. This, however, being a thing of the past, is irrelevant for present economic action and should have no influence on the bank rate. The profits are also naturally very different in different enterprises. Attempts have therefore been made to refer the bank rate to the average return of all capital

already invested. This is positively wrong. Interest can never be regulated according to such an average, but has rather to be referred to the marginal return, the "return of the last investment." But the return of the last investment made at the present time must always be, or tend to be, equal to the bank rate. People will go on investing as long as there is any profit over and above what they have to pay to the bank. Thus the bank authorities can obtain no guidance from such a rule.

If we consider these different attempts for a moment, it stands out quite clearly that there can be no other solution of the problem than that here presented. The bank rate must in theory be referred to the equilibrium rate of interest as defined by the conditions for an equilibrium of the whole process of price-fixing. The practical guide for the central bank must be sought in the stability of the general level of prices. The bank rate that results in such a stability being attained represents as truly as possible "the real rate of interest of the capital market" and may be taken as a practical definition of that rate. It is impossible to advance further, and no more exact definition of the rate of the capital market can be given if it is required that this definition should allow us to ascertain the actual height of the rate.

It is necessary now to pay some attention to the special conditions of a progressive society. From our present point of view this society deserves particular attention because it has a continually growing need for means of payment. These means must be supplied by the bank, and will be supplied if the bank rate is adjusted to the theoretical equilibrium rate of interest. In this case all need for capital for buying goods or services is covered by the actual savings of the society without having recourse to the bank. But the need for

more means of payment that is characteristic of the progressive society is met by the bank advancing money for the purpose at the bank rate.

It is well now to clear up a complication which, for the sake of simplicity, I have hitherto set aside. Our whole reasoning has been based upon the tacit assumption that there is only one rate of interest on the capital market. We know that this is not the case. There are, firstly, the differences arising out of different risks; but we may disregard these and take account only of the differences in the rate of interest which result from the fact that the rate is paid for disposal of capital under different conditions. The most conspicuous difference is that between short-term and long-term loans. It is customary to speak of a "money market" as distinct from the "capital market." There is, of course, no sharp line of demarcation between these two markets, which indeed are related to one another by innumerable connections. As, however, different rates are usually quoted for loans under different conditions, it may be asked to what rate of interest the bank rate should be adjusted. The answer is clear enough. The bank rate ought to coincide with the particular rate of interest that must be paid for such loans as are usually supplied by the bank. Then other rates will adjust themselves to this rate and the result will be seen in the stability of the general level of prices, which is a proof of the correctness of the bank rate.

In business circles, and even in political discussions, the question is very often raised, how the rate of interest affects the prices of commodities. The practical business man is perhaps most often inclined to believe that an increase in the rate of interest is bound to increase the cost of all products and therefore to enhance prices, and he finds it very confusing when he hears a scientific

economist or a representative of a central bank proclaim that the rate is increased in order to force prices down. It is obviously the duty of economic science to remove this confusion, and we are now in a position to do so. Going back to the general theory of prices, we have first observed that the rate of interest is a price for a service and that this price enters into the cost of production just as the price of any other service required in the process of production. Thus, no doubt, a rise in the rate of interest is followed by a corresponding rise in the prices of the goods for the production of which disposal of capital has been required. We must, however, always remember that the general theory of prices is exclusively concerned with relative prices and does not tell us anything about the absolute height of prices. The latter question is exclusively an object of the theory of money. If by a suitable bank policy the general level of prices is kept invariable, every rise in some prices must necessarily be counterbalanced by a fall in others. If the equilibrium rate of interest increases, only those goods will rise in price for the production of which a particularly large amount of disposal of capital has been required, whereas other prices must sink so low that the average level of all prices remains unaltered.

A quite different question is that of the influence of the bank rate. As long as the bank rate coincides with the equilibrium rate of interest, it has no particular influence on prices. But if the bank rate is raised above the equilibrium rate of interest, the demand for loans is affected. As I have already explained, people begin to reduce their debts to the bank. The community is provided with means of payment in a more restricted manner, and the nominal purchasing power of the market is reduced, with the result that prices in general must fall. In this way the raising of the bank rate above the equilib-

rium rate of interest of the capital market brings about a fall of the general level of prices. Conversely, a reduction of the bank rate below the equilibrium rate of interest is, as we have seen, bound to raise the general level of prices. These effects are quite separate from the effects of fluctuations in the equilibrium rate of interest; and it is absolutely impossible to come to any clear understanding of the matter until people learn to distinguish between the bank rate and the equilibrium rate of interest of the capital market.

Thus far we have confined ourselves to a discussion of static conditions, the term taken in the wider sense already indicated. It is necessary, however, to say some few words about interest in a social economy under dynamic conditions. What I particularly have in view is the rôle of interest as a regulator of trade cycles.

In order to meet its *present* desire for more complete equipment with real capital, society is always in need of saving. These savings are supplied by the individual saver, who saves in order to accumulate funds for *future* needs. Thus, the objects in view in both cases are entirely different, and there is no direct connection between the desire to supply the present society more fully with real capital and the desire of individuals to save for coming years. Still, the possibility of satisfying the former desire is strictly limited by the second. If, as a result of certain causes, say, of a technical nature, the first desire increases and becomes more intense, these causes have no direct influence on the second desire. The increased demand for disposal of capital is not immediately followed by an increase of savings. An equilibrium can then be brought about only by a rise in the rate of interest restricting the demand for disposal of capital. It is possible, however, that this rise in the rate of interest will also have a certain influence on saving

and bring about a moderate increase in the amount of capital placed at the disposal of production. In this case the result is a certain increase in the total amount of real capital produced, the productive forces of the society being drawn from the service of consumption to the production of real capital, and perhaps also more intensely used. We then have what is generally called a rising tide in the cyclical movement of trade. A reaction comes when the production of real capital can no longer bear the burden of the high rate of interest. A general set-back in the rate of production of real capital takes place and a period of depression follows. The consequence is a heavy fall in the rate of interest. The new low rate acts as a stimulus for a renewed activity in the construction of real capital and a new rising tide is engendered.

In both phases of the cyclical movement the rate of interest works as a regulator tending to keep the movement within narrower limits. This is obviously a very important function of the rate of interest.

If the central bank, during a rising tide, keeps its bank rate too low and does not raise it in accordance with the rise in the natural rate of the capital market, the consequence must be, as in the case we have already discussed, that the market borrows unduly much from the bank and becomes too abundantly supplied with means of payment. The immediate result is that purchasing power is put at disposal for an increased construction of real capital, and the rising tide acquires an artificially increased strength. This effect is, however, much increased in consequence of the rise in prices that must follow upon the excessive supply of means of payment. What actually takes place is an inflation of the currency, depriving large groups of income-earners of a part of their real income and placing these means at

disposal for further construction of real capital. We have here to do with a compulsory saving representing perhaps the most important source for supplying the means required for the rising tide. The fact that a central bank fails to raise its bank rate in accordance with the actual situation of the capital market very much increases the strength of the cyclical movement of trade, with all its pernicious effects on social economy. This is an evil which ought to be prevented in a rationally organized society, and it can be prevented provided the bank regulates its rate in accordance with the natural rate of the capital market. But here again it is impossible for the central bank to know exactly what this "natural rate" is, and in this case too the bank has only to regulate its rate so that the general level of prices is kept as constant as possible. Supposing the bank succeeds hereby in entirely eliminating the rise and fall of the general level of prices, which always accompanied the trade cycles as we knew them before the war, the whole cyclical movement of trade must become very much attenuated. For it will then be deprived of the great stimulus derived from the continual falsification of the capital market that is a consequence of an alternately too abundant and too scanty supply of means of payment.

This observation throws a clear light on the futility of the mathematical wave-theory of life. It has become a fashion among economists, or rather among statisticians without a thoro economic training, to look upon everything that happens in economic life as subordinate to statistical curves and subject to being predicted by a mathematical analysis of these curves. Against this determinism we now have to put up the incontestable fact that a rational regulation of the bank rate lies in our hands, and may be accomplished if we only perceive

its importance and decide to go in for such a policy. It cannot be doubted that with a bank rate regulated on these lines the conditions for the development of trade cycles would be radically altered, and that indeed our familiar trade cycles would be a thing of the past. In this case it is plain enough that our future is not determined by mathematical curves but by our own intelligence and will. But if this is so, the whole so-called science of business-forecasting inevitably becomes very much discredited. What the economist can do is to examine present facts and proposed lines of action, and to show how they are likely to influence the development of economic life. But he can never make a prediction of our future independent of our own actions. And we should never lose sight of the fact that the future is influenced by coming events about which we know nothing, and the prediction of which in any case does not belong to economic science.

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COST AND ITS RELATION TO VALUE

SUMMARY

I. Cost not to be identified with entrepreneur expenses, 531. — Classification of costs, 532. — The objective factor in cost, 534. — II. Cost of production does not govern value, 535. — The function of cost of production, 539. — III. Cost of acquisition underlies demand, 540. — IV. Two factors in decline of price-offers for additional units, 542. — Marshall's objection to the second, 544. — The derived demand schedule, 545. — V. Apparent circuity of the value system, 546. — Multiple valuation the escape, 547. — VI. The value of scarcity-products, 549. — Three cases, 550. — VII. The influence of variations in the objective factors, 554. — Marshall's cost curves, 555. — VIII. Efficiency cost in using labor, 556. — Land, 557. — Professor Bye's reasoning, 558. — Savings, 559. — IX. Special relation of the entrepreneur to market values, 561. — The rôle of profits, 562.

I. Nature and Varieties of Cost

The term "cost" is used in popular speech to refer generally to what is given up or surrendered or sacrificed in order to obtain something else. Unless we can use it without deviating too much from this traditional meaning, we had better not use it at all. Such things as pain, disutility, and resistance do not meet this requirement:[1] they are not what we give up in order to get economic goods. Whatever we may think, therefore, about their importance in the value-making process, it seems undesirable to refer to them as costs. An economic force does not become a cost by virtue of its influence on the

1. The resistance concept is open to the objection of ambiguity as well. It is used to refer to the reluctance of those who furnish the factors of production and to the competition of rival users of those factors. Thus Professor Bye (Quarterly Journal of Economics, xli, 42, 43) speaks of waiting as a form of resistance, and immediately adds that it makes no difference for the theory of value whether saving involves a sacrifice or not.

supply of commodities. The real problem is to discover whether any of the factors in economic life that can properly be described as costs do have any bearing upon the ratios in which goods exchange for each other, and how they work. If none can be found, that should be an end of cost so far as value is concerned. I believe there are such factors, and I shall try in what follows to explain their importance.

We may begin by eliminating one which is often the center of attention. The sums which the entrepreneur "gives up" in order to obtain the resources needed in his enterprise are indeed costs from his point of view, and it was doubtless the commercial practice of so referring to them which led early economists to transfer the term to those forces which they believed to underlie the entrepreneur's outlays and therefore to be the "real" costs in the situation. They have no causal relation to value, however, being only elements in the process by which, in entrepreneur-organized economies, the goal set by the true value-making forces is attained.[2] If, therefore, we treat these outlays as *the* costs in the value problem, as Professor Bye is disposed to do,[3] we shall have to conclude that values are not really influenced by costs at all, but by the factors which themselves "explain" costs, which is Professor Bye's position. Altho this does no violence to the true meaning of the word, it has the double disadvantage of bestowing the term on a factor which has no direct importance, and of drawing attention away from much more significant factors in the value-making process to which the name cost can even more properly be applied. It seems better, therefore, to analyze the special functions of the entrepreneur in terms of the later word "expenses," and to reserve

2. Cf. what is said in the concluding section of this paper.
3. Quarterly Journal of Economics, xli, 34.

costs for those "given up" things which influence value directly.[4]

Such giving up or sacrifice is not hard to find in this finite world of ours, and particularly in that part of it which is the special interest of the economist. Few of us have so curbed desire that one life will afford us time enough to do all the things that appeal to us, quite apart from the question of the needed external resources. In the economic sphere the lines are even more tightly drawn; scarcity is the hall-mark of our subject-matter. Every economic end, therefore, is achieved only by the foregoing of other ends somewhere. Whether such foregoing has any influence on the value of goods is another question—the central problem of this paper.

Costs are of various kinds, and since these do not have the same relation to value, it is important to distinguish between them.[5] The two most useful bases of classification are (1) the nature of what is foregone, and (2) the purpose for which this is done. According to the first, there are three principal types of cost, which may be designated as satisfaction costs, consumption costs, and efficiency costs. Satisfaction costs comprise those uses of our time and energy which we forego when we engage in "productive" activity — what Adam Smith meant when he spoke of a man's laying down "his ease, his liberty, and his happiness."[6] Consumption costs are those acts of consumption which are excluded when we utilize productive resources for a particular purpose — the book we cannot buy if we go to the theatre, the

4. According to this view the expression "opportunity cost" is somewhat misleading, since it implies that there are other kinds of cost, whereas all costs are opportunities foregone. Cf. Knight, Quarterly Journal of Economics, xxxviii, 592, 593.

5. The following classification somewhat resembles that suggested by David Green in an article on cost published many years ago in this journal (viii, 226), but Green did not analyze its relation to value further.

6. Wealth of Nations, Bk. I, chap. 5.

motor-car we cannot have if we decide to spend the summer abroad. Efficiency costs are those increases in productive capacity which are precluded when resources are used in a particular way — the useful tool in which our savings cannot be invested if we choose fine raiment instead, and similar losses which sometimes attend the use of the other factors of production.

There are, it is true, certain resemblances and relations between these classes. The first two, satisfaction costs and consumption costs, obviously both include things which men desire and which would count as part of our "psychic income" if we did not have to sacrifice them. The second, however, refers only to produced objects of desire, the vendible commodities and services which we call economic goods, while the first has to do solely with feelings and desirable activities. The second and third classes are related in a different way. The significance of sacrificed efficiency lies, of course, in the proportionate curtailment of consumption which it involves. It is impossible, however, to analyze the latter without a preliminary study of the former, because of important differences in the factors that control them. Furthermore, the different types of cost play very different rôles in the determination of value, as we shall see.

When viewed according to the purpose for which they are incurred, costs fall into two principal categories — costs of production and costs of acquisition. The former, as the term implies, are those sacrifices — of any of the above three kinds — which are the necessary condition of producing a given good, or in more technical terms, of increasing the sum of utilities. The latter are those possibilities which the consumers of a good forego in order to obtain it by way of exchange. If costs of production and costs of acquisition were always equal in any given

case, there would be no point in dealing with them separately, so far as the problems of normal value are concerned. It is a commonplace, however, that in a world where perfect mobility of labor is not even approximated, such equality is the exception rather than the rule: one man may buy for a trifling sacrifice of comfort, or alternative consumption, a good which "cost" its producer heavily in both. Since an ever-increasing share of the things modern man consumes is acquired from others, it is obvious that the distinction between these two kinds of cost is an important one.

Now the cost involved in any act is obviously compounded of two factors — a quantity factor and a quality factor. The consumption cost, for example, incurred in producing a given commodity depends not only on how much we esteem other forms of consumption, but also on the amount of such consumption we are sacrificing. The latter, in turn, depends on the amount of resources required to produce the commodity in question and all other goods for which they could have been used. This is not a matter of opinion or feeling but of hard technical fact. Similar reasoning applies to the other kinds of cost of production. There are objective factors in every cost.[7] The concept is meaningless without them.

II. Cost of Production

Our problem, then, is to analyze the relations between these different kinds of cost and the ratios in which goods exchange for each other. We may begin with the one which has long been the center of interest — cost of production. According to the view developed

7. Professor Bye seems to have some such distinction in mind when he says that the "physical elements" and probably the "psychic elements" of cost are "absolute" (op. cit., p. 34); but his analysis is along different lines.

above, this must be understood to mean the opportunities in the way of satisfactions, or consumption, or efficiency foregone by the producers of a particular good or as a result of its production. As just explained, the basis of this sacrifice is necessarily the amount of labor or other resource used. We may call this amount the objective cost factor.[8] It is often spoken of as the cost itself, but such expressions are inaccurate. To say that ten days' labor were devoted to the production of a particular good does not tell us how much, if anything, was given up in order that it might be made available.

Nor can the outlays of the entrepreneur properly be called costs of production. What he gives up is not a condition or necessary consequence of the production of the good in question, for he would be under an equal necessity if something else were produced; and even production in general does not depend on it. So far as the fundamental forces at work are concerned, he is only a channel or transmitter of the demand-prices of consumers. It is only in performing his function of risk-bearing that he gives up anything in order that production may take place. This is a part of the satisfaction costs involved in producing a given good, but it is a very different thing from the sums he "advances" to other people.

The three kinds of cost of production are best considered separately. I shall take up satisfaction costs and consumption costs at once, leaving the complicated question of efficiency costs for discussion in a later part of the paper. Let us first consider a society where labor is perfectly mobile and where nobody works beyond the point where labor begins to be irksome, using that term broadly. Here there are no satisfaction costs, and

8. The amount of labor, etc., required to produce a unit of the sacrificed alternatives being referred to, accordingly, as the objective factor in *their* cost of production.

hence the products of labor must either command no price at all, or their price must be determined by some other factor. The first possibility must be ruled out, for the products are scarce and cannot be made more plentiful without incurring satisfaction costs. If the producer, therefore, should give up his product without a *quid pro quo*, he would have to reduce either his consumption or his satisfactions — an irrational choosing of the less rather than the greater. Moreover, he must receive a product requiring as much labor for its production as the one he surrenders; that is, goods will normally exchange in proportion to what I have called the objective factor in cost. Only in this way can laborers working different amounts of time to produce different goods obtain the equal earnings which would certainly result under conditions of perfect mobility.[9] Cost of production does not govern value here; it is the objective factors alone which control.

If we move a stage nearer reality by eliminating the assumption that no labor is irksome, the problem becomes more complicated. In the first place, we must distinguish between general irksomeness — that which is felt by laborers of all kinds as they extend their efforts beyond a certain point — and particular irksomeness — that which characterizes only the labor of those engaged in certain branches of production. The latter, unless men are completely indifferent to such aspects of their work, cannot but affect values. Men will avoid the more irksome kinds of work — we are still assuming perfect mobility — and the things produced by such labor will rise in value until the extra compensation which this affords the laborers checks the exodus. Whether this extra compensation can be regarded as strictly

9. The tendency of incomes to equality has been too much neglected in value theory. Cf. Franz Oppenheimer, Wert und Kapitalprofit, pp. 30 ff.

proportional to the differences in irksomeness of the different occupations seems to me very doubtful, for reasons which I shall not attempt to develop here; but I think no one will deny that the presence of this kind of cost is certain to affect values to some extent.

But no such reasoning can be applied to the general irksomeness of labor. This affects only the scarcity or plenty of labor as a whole, that is, the amount of work which a given laboring population is willing to do; and, as Professor Davenport has pointed out, the scarcity of a productive factor does not explain the scarcity of particular products made with the aid of that factor.[1] To explain the value of a given thing, we must explain why that thing is plentiful or the contrary. Only in those extremely rare cases where a good is made from some one resource which has no other use, can we say that the supply of a good and the supply of the factor used in making it are traceable to the same causes. In the case we are now considering we may be certain that goods would exchange in proportion to the labor expended upon them, regardless of the general disutility which attended some of the efforts involved; for, whether men like to work or not, they seek equality of wages wherever possible, and that is attained only when the man who has spent two days on a given article can sell it for twice as much as his neighbor receives for that on which he spent only one day. As in the previous case, where there were no satisfaction costs of production, it is the objective factors in cost which govern value. If more valuable goods are found to involve greater satisfaction costs, it is simply as a *result* of the greater amounts of the productive resources used.

1. Economics of Enterprise, p. 192. We cannot say, with Marshall, that the supply price of a good is the amount "required to call forth the exertion necessary" for its production. (Principles of Economics, p. 142). The supply price of labor, if there be one, is not a factor in the value of commodities made by that labor.

Let us now abandon our other assumption and consider the case where labor is not only irksome but lacking in mobility. Incomes, of course, no longer attain complete equality, and therefore some workers — those whose products remain relatively scarce, because competition is impeded — exchange on better than even terms with other less fortunate producers. The value of goods is not in proportion to the objective elements in their costs. The significance of satisfaction costs is even further diminished; for altho the particular irksomeness of labor continues to affect the supply of some commodities, and hence their value, the general disutility of labor is now not proportional to the value of goods even as a resultant. We can not infer that the more expensive good had the greater satisfaction cost of production. Another influence upon value has been introduced, which economists since the days of Cairnes have fully recognized — the relative scarcity of certain kinds of labor. The objective elements in cost, tho they do not lose all their influence, no longer govern alone.[2]

Before we attempt to deal with this factor we must complete our analysis of cost of production by considering the influence of consumption costs. These, like all costs, are compounded of two factors — an objective factor and the consumption derivable from it. From the individual producer's standpoint this, in an exchange economy, is simply the opportunities in the way of income which the producer sacrificed when he entered this branch of industry rather than any other.[3] From the social standpoint it would be, not the sum of these individual producers' costs, but the total desired consumption foregone by the community. Neither has any

2. The influence of the objective elements under these more complicated conditions is taken up in a later section.

3. This, apparently, is all that many people have in mind when they speak of "opportunity costs."

controlling influence on value. Wherever labor is mobile, values are determined by the objective elements in cost,[4] not by cost of production in either of the two senses so far considered.

I do not mean to imply by this that cost of production has no function of any consequence in the economic world. Both forms of it control the allocation of resources between the various competing demands for them. Where men, for example, greatly regret the leisure they forego in order to engage in productive activity, that is, where the satisfaction costs of production are great, they will devote little of their lifetime to production and much to leisure; while men who value these foregone opportunites at little or nothing will work long hours and die "in harness." Only thus can they avoid the irrational rejection of the greater in favor of the less.

The influence of consumption costs of production is analogous to this. It appears most clearly in the cost of the isolated producer, the Crusoe who has rendered such valiant services to economists. No investment of his time in any particular enterprise is justified unless he feels that the product thereof will be more desirable than anything else he could have produced in the same time, and thus the weighing of cost underlies his whole activity and determines the allocation of all his resources. From the social point of view consumption costs work by excluding less eager (or less capable) bidders from the market, thus bringing it about that resources are distributed among rival uses, and that, socially speaking, the greater is chosen rather than the less. This influence upon the supply of goods has led

4. The objective elements of the satisfaction costs and the consumption costs of production are, of course, the same in any given case; that is, both are derived from the amount of the productive factors devoted to producing the good in question.

some to conclude that cost of production in this sense is a factor in the determination of value. The reasoning is fallacious, however, since the varying amounts in which different goods are produced are accompanied by, and indeed the result of, corresponding differences in the demand for these goods, so that supply and demand remain in the same relation to each other and value is unaffected. Consumption cost of production determines the volume in which particular goods are produced, under given conditions of demand,[5] but not the ratios at which they exchange.

III. Cost of Acquisition and Demand

To return now to the problem of relatively scarce labor. It is, of course, only because the products of such labor can never become as plentiful in relation to demand as the products of other labor, that their values do not tend to be in proportion to the labor expended on them. Demand, therefore, must be a factor in our explanation of normal value under these conditions. Now this is not one of the primary economic forces. As Professor Davenport has pointed out,[6] it is not merely a simple reflection of the relative intensities of our various desires (even allowing for differences in money incomes), but a willingness to exchange on given terms, derived from a comparison of the desirable things to be given and received. In other words, cost of acquisition underlies it. This needs further analysis.

Two points are to be noted. In the first place, what is being offered, fundamentally speaking? The conventional answer that goods are really bought with goods

5. Conversely, given the conditions of production, changes in demand merely affect the volume of output, not the values, of the goods affected.

6. Op. cit., p. 93. I do not think it is quite accurate, however, to say that "the thing in prospect is to the thing foregone as 1 is to 1." Equality does not afford a basis for choosing one thing rather than another.

is true enough, but it does not get at the root of the matter. A series of goods-offers does not afford any adequate basis for "clearing" a market, which is what must be effected. To do this, the highest bidders must be singled out, and this requires that the buyers' offers be expressed in some common medium. There is no direct way of discriminating between the offer of ten pounds of butter and four yards of cloth, in a general market. In practice, of course, the offers are expressed in money, but that is only a mechanism. What men really offer in a market is labor — their own, or labor due them as tribute of some sort — and accumulated wealth, the latter having to be evaluated before its force as an offer can be gauged. As a consequence, it is not, strictly speaking, a fixed total of purchasing power that is concentrated on the markets of society, but one that fluctuates according to men's willingness to perform labor.[7] In the second place, the buyer's offer cannot be regarded as a mere choosing of the greater alternative, in the sense of a simple reaction to the stronger stimulus. The alternative is not merely felt, it must be known. The buyer must know how much of the various goods foregone he could have obtained with the price he offers, which means that his choice is something more than a quasi-mechanical reaction to an external stimulus. Of course, there are many "thoughtless" choices which are hardly more than this, but they do not account permanently for any great share of economic activity.

This view of demand does not require us to assume an excessive amount of calculation in human affairs. We do not have to come to a decision anew every time we make a purchase. Unless the article is a novelty, or we are conscious of appreciable changes in the conditioning

7. For short periods, to be sure, it is practically fixed, because adjustment at the labor-leisure margin is nowadays difficult and slow; but in long-run analyses the possibility of change cannot be entirely ignored.

factors, we simply repeat our last offer; and when we are not marginal purchasers, we do not even have to do that — we merely buy the amounts to which we have become accustomed. Calculation, moreover, being a form of effort, itself involves satisfaction cost, and we resort to various expedients to avoid or minimize it. Many of our "decisions" are not really made by us but adopted from others, through imitation and tradition; while many of those we do make are only roughly formulated. It may be better, for example, to satisfy a given want to satiety, especially if it is no great drain on our resources anyway, than to bother about the slight gain to be had by a different expenditure of part of the amount involved. It must be remembered, too, that our "interests" and preferences overlap so much that in many cases there is no one best way of distributing our expenditures. There are considerable zones of indifference.

IV. Demand Schedules

Demand appears in markets in the form of a schedule, the market schedule being the sum of the schedules of the individual buyers. The individual schedules are of two sorts — the primary and the derived. The former expresses the prices which the buyer is willing to pay for a series of units of the commodity: how much for one unit, how much for one more, and so on. The latter gives the number of units which the buyer will take at a series of prices — the familiar demand schedule of value theory. It is the one by which the value of a given stock is proximately determined; but since it is necessarily derived from the former, we must begin our analysis with that.

The price which a man will give for one unit of a good must be such that the consumption or satisfaction (whichever is greater) that he will forego, if the exchange is made, will have a weaker appeal than this one unit has

for him; that is, the cost of acquisition must be less than the utility of the good acquired. This cost is not *any* of the utilities the buyer could obtain with what he offers to give in exchange, but the *least* addition he could make to his consumption (or satisfaction) if he did not buy the good in question. The availability of substitutes sets a further limit on the price offered.[8] For a second unit he will be willing to pay less, partly because he expects to "enjoy" it less, and partly because the same price would now entail the sacrifice of more important opportunities than the purchase of the first did. To keep cost of acquisition lower than the utility acquired, the price offered must be doubly reduced.[9]

The first of these reasons is not simply a matter of diminishing response to successive repetitions of a given stimulus — a point too much emphasized in discussions of value. We may buy our oranges by the dozen but we do not consume them that way, and the vanishing desire of the surfeited does not explain why we will not buy more unless they are cheaper. It is more likely to be due to an analogous but different cause — the fact that an "interest" or desire is weaker when it has been satisfied recently.[1] We know that some of the dozen will, when eventually consumed, be worth less to us.[2]

8. Professor J. M. Clark has suggested that, as a result of advertising and other factors, many commodities which are really identical now come before the consumer as different things and should therefore be treated as substitutes. Of course, the influence of substitutes depends on the buyer's realization of their likeness to other goods. — Journal of Political Economy, xxvi, 16.

9. It should be noted that, on this basis, the price offered for a second unit of certain goods (say washing-machines) is so small that it is negligible as a factor in the market.

1. Cf. Professor Miller's article on "Utility Curves and Consumer's Surplus," in this journal, xli, 292 ff. Professor Miller's contention that his daily breakfast oranges are "indistinguishable in the satisfaction they yield" seems to me to go too far, however. If compelled to economize he could tell which three, say, he could most easily sacrifice.

2. The confusion would be avoided if we viewed each day's budget as a unit. Then it would be clear that we are not dealing with the diminishing utility of a stock.

The other reason for the lower price offered for a second unit — the greater importance of the sacrificed opportunities — has usually been ignored or ruled out as negligible. Marshall, as is well known, argued that we spend such a small part of our incomes on any one good that the "marginal utility of money" is affected in very slight degree as a result of what we offer for any one unit — so slight that there are "few practical problems" where this factor needs to be allowed for.[3] To this reasoning, it seems to me, there are two objections, apart from the question of the importance of the exceptions.[4] To begin with, as Marshall admitted in a note on the passage referred to, we cannot add demands without correcting for this error. Since each demand is a little too large if we do not allow for the increasing marginal utility of money, the sum would also be too large. In other words, the total demand for commodities would be greater than the total income of society. This difficulty is of more than theoretical importance. It points to another more serious one. The increase in consumption costs (or marginal utility of money) is not due solely to the fact that something has already been allotted for the purchase of the first unit, but also to the fact that still more has been allotted for the purchase of other goods which stand higher in the buyer's want-scale than the second unit of the good in question. A man's price-offer for a second suit of clothes, for example, is lowered not only by reason of his purchase of the first one, but also by reason of his desire for a hat, a pair of shoes, and an overcoat before he provides for another suit. This, it should be noted, is not to be confused with consumption cost itself, that is, known alternatives to a price offered for a given good. We are here

3. Principles, p. 132.

4. It seems to me that they are more important than Marshall believed. House-rent, for example, is a heavy item in most budgets.

concerned with other price-offers — offers for other goods of which the price has not been determined, and which therefore cannot be treated as a part of consumption cost.[5] I conclude, therefore, that we cannot properly omit this second factor in the decline of price-offers for successive units of a commodity.

The primary demand schedule as thus understood is the basis of the derived demand schedule, the schedule which supplies the data from which the conventional demand "curves" are plotted. If a man is willing to pay ten dollars for one unit and four dollars for a second, after taking into consideration all the possible alternative uses of his purchasing power, we must interpret these facts as meaning that he would be willing to buy two units at seven dollars each. They are worth fourteen dollars to him in one statement of his attitude and must be so in the other. Marshall rejected this view of the matter on the ground that, since the purchaser took the second unit at seven dollars of his own free will, we must assume that he regarded it as worth seven dollars and not four.[6] But the reason why he felt inclined to take the second at seven dollars was that he did not have to pay ten for the first and therefore was not compelled to sacrifice such important alternatives in order to spend a given sum on a second. The price of the second is indeed, as Marshall urged, not conditional on the purchase of two, but the amount he is willing to pay for a second is conditional on the amount he will have to pay for the first. The consumption cost he is willing to incur in order to obtain the *two* units is the basic consideration, however we view his offers. Similar reasoning applies to the purchase of additional units: from the

5. I shall try to show presently that such grouping of demands is essential to an adequate analysis of market price. See below, pp. 546 ff.

6. Principles, p. 126 note. Davenport apparently holds about the same view. Op. cit., p. 47.

amount he will give for three we derive the price at which he will take three, and so on. These individual derived schedules are added together to obtain the market schedule, and this determines how low the market price must fall in order to effect a sale of the whole available stock.[7]

V. Multiple Market Value

This analysis of market value, it must now be noted, is concerned with a single commodity. It assumes that the resources needed to obtain units of all other goods are known, and therefore may be made the basis of estimating the amount of sacrifice (consumption cost) involved in any price offered for this particular good. Such an assumption, however, is not legitimate unless the buyer satisfies all his other wants by producing for himself. If he *buys* other things too, they are also in process of evaluation, and hence the consumption cost of any purchase is indeterminate so far as they are concerned. We cannot tell how much of them we shall have to forego if we pay a given amount for something else. Only by assuming given values for other things, it would seem, can the market for any one good be given any meaning. This in turn seems to make the whole value problem circular, — the value of A depends on the value of B, which depends on the value of A, — and some writers have rather despairingly concluded that it was in fact hopelessly so.[8] The circuity, it seems to me, is more apparent than real.

7. According to the view of demand and price developed above, it is evident that we must modify the Marshallian doctrine of consumers' surplus. The only buyers who obtain the commodity for less than they would have been willing to pay are those who would have purchased *just as much*, had the price not fallen quite so low. They are the only consumers to benefit from a strategic position in the market. The others pay for all they get. Of course, they benefit from whatever cheapens the goods they buy; but that is another matter. Cf. Miller, op. cit., p. 306.

8. Davenport, op. cit., pp. 109, 113.

In order to escape from the dilemma here presented we must retrace our steps a little and analyze the demand for several goods taken together. For simplicity let us take two, the principle being exactly the same for a larger number. The primary demand schedule of the individual buyer now depicts how much he will pay for one unit of either A or B, whichever comes highest in his want-scale; then how much more for a unit of A or B, whichever comes next in his want-scale; and so on. Thus:

For one A,	$10
For one B,	8 more
For second B,	6 more
For third B,	2 more
For second A,	1 more
For fourth B,	.50 more

From these figures, as explained in the preceding section, it appears that the buyer's derived schedule for A is:

1 unit	at $10
2 units	at 5.50

and his schedule for B is:

1 unit	at $8
2 units	at 7
3 units	at 5.33
4 units	at 4.12

These schedules, combined with the similarly derived schedules of other buyers, give the market schedules for A and B respectively. The only costs of acquisition taken into account are thus the ones based on the buyers' own potential productive capacity (consumption costs) and the satisfaction costs they incur by engaging in productive activity.[9] Hence the values of the

9. For the modern highly specialized worker, who often seems literally unable to produce anything that he himself would care to consume, the latter is obviously the more important consideration; but in any long-run view of the valuation process the former would by no means be negligible.

two goods are not based upon each other, but are simultaneously determined from the relevant data.

We must beware, however, of identifying this logical simultaneity in any way with the realistic process of valuation. Values are not, and cannot be, determined simultaneously in practice. Even if we could bring ourselves to believe that buyers in general ever have such systems of interlocking price-offers in mind when they decide upon their purchases, — imagine the complexity of such systems under modern conditions, — we should still face the stubborn fact that buyers cannot be in two places at once and do not all assemble in the same market at a given time. Therefore the total demand schedule for A analyzed in the preceding paragraph never impinges directly upon any market for A. In every case the value of A is determined by the buyers then present, not by all in the community who are willing to pay a price for that good. The demand schedules really implicit in the data are therefore only *normative*. They rescue the value-making process from circuity by defining its goal or limit, but they leave it circular as ever in its mode of operation.

This will be clearer if we examine the process a little more closely. The natural, and indeed the only, thing for the would-be buyer to do when considering how much he can offer for a given good is to assume that the values of other things, which he must weigh as alternatives, are likely to continue in the future what they have been in the past. This may well be erroneous, and under highly dynamic conditions is almost sure to be. When he discovers this, he will, in strict theory, need to shift some of his expenditure back to these previously consumed things in order to make the most of his opportunities. This, in turn, will raise the value of these goods and induce a further but slighter reverse move-

ment, and so on until the theoretical values indicated by the normative demand schedules have been more or less closely approximated. The errors and inconveniences involved in this process, tho real, are not great enough to make us unwilling to rely on its guidance. And, of course, they work pretty slowly.[1]

VI. The Value of Scarcity-Products

The preceding analysis of market value constitutes the first step toward explaining the long-run value of goods made with scarce labor. When all the laborers who can or will engage in a certain kind of work have been attracted to it by the high earnings received by the pioneers in that industry,[2] the markets will set a value on the supply available which may be regarded as normal for the given conditions. Assuming for the moment that the laborers do not assist in the making of any other product and receive no assistance themselves from laborers of other grades, that value will depend on how many units of the good in question can be produced by the finally available labor supply; in other words, on the objective factor in cost of production — the amount of labor expended on each unit of the good. There are thus two causal elements in value under these conditions: the objective factor in cost and the relative scarcity of labor. The latter is *measured* by the ratio between the earnings of these laborers and the earnings of laborers not

1. It would seem, therefore, that we ought to distinguish between *immediate* and *ultimate* market valuation. The latter, being the true expression of the will of consumers, is what controls the basic allocation of resources. For a somewhat similar view of market price, see an article by E. G. Nourse in this journal, xxiii, 632.

2. This implies that the whole demand eventually manifested impinges upon the small early supply. This is not correct, since demands usually grow from comparatively small beginnings; but demand keeps far enough ahead of supply to keep earnings attractively high. The process is thereby prolonged, and the *continuance* of abnormal conditions may be mistaken for evidence of equilibrium.

similarly sheltered from competition. This wage-premium is in no sense to be regarded as causal. It is wholly the result of the fact that the laborers get the value of their product and that happens to be high. The price of this product will be to the prices of other things in a compound ratio of the respective amounts of labor required and the earnings of the laborers employed.[3]

But this is a wholly unreal case. Scarce labor-groups who can engage in the production of only one good are extremely rare, and laborers who turn out their product without assistance from the members of other groups are even rarer. This complicates the problem, so far as the measurement of relative scarcity (that is, wages) is concerned, but it does not alter the nature of the two causal elements in value. There are three general cases to be considered: (1) where the scarce labor is used for *one* purpose and receives assistance from other labor; (2) where it is used for *several* purposes and does not receive such assistance; and (3) where it coöperates with other labor in several branches of production. I shall take them up in this order.

In the first case, the supply of the product eventually available is obviously limited by the number of the scarce laborers — what they can make with the help of their more plentiful assistants. The value set upon this supply by the market does not determine their earnings directly, since they have to surrender some of the selling-price to their collaborators. The market evaluates only the combination.[4] How much they can retain depends

3. Professor Bye, in the article already referred to, analyzes the influence of scarcity as a process by which the "resistance-elements" of cost are "converted into pecuniary cost" (p. 37). This, of course, uses cost in the sense of entrepreneur expenses, to which I have already objected. It seems to me more correct to say that scarcity is converted into value.

4. Carver, Distribution of Wealth, p. 143.

on how much must be paid in order to obtain enough of the more plentiful labor [5] to coöperate with this particular group. The demand for this coöperating labor is of a peculiar sort. It is not willingness to buy a varying number of units at a series of prices, as ordinarily, but a desire for a fixed number of units (determined by the number of scarce laborers for whom assistants are needed), at any price below a certain maximum. The buyers are willing to pay whatever they must in order to avoid exclusion from the market.[6] The value-ratio in this case is therefore doubly compound, the first term being the sum of the two different wage-rates, each multiplied by its objective factor. For example, an article made in two days by a laborer receiving ten dollars a day with the aid of two laborers whose wage is five dollars a day will exchange for two articles made wholly by the cheaper labor and requiring four days apiece to make. The wage-rates, as before, are not causal but indices of scarcity.

In the second of the above-mentioned cases — laborers making several commodities without assistance — it is obvious that the supply of no one of the products made by the scarce labor is determined by the available supply of that labor. Hence we must seek further for the factor which proximately governs value. To do this we must analyze the process by which would-be users of the various products are excluded from the market for this labor. Fundametnally it is a question of how the total demand schedule for it is made up. For enough of it to make one unit of any of the products, the demand price

5. This may itself be scarce in relation to labor other than that with which it coöperates here.

6. The remaining demand, without which wages would be indeterminate, comes from other uses of this labor; either products to which it happens to be one of the scarce contributors, or products which it makes unaided.

is the market value of that one unit, and the demand price for *each unit* of the labor required will be that value divided by the amount of labor.[7] From the market value of larger supplies of the product we derive demand prices for larger amounts of the labor. This series of demand prices is combined with similar series derived from the demand for the other products, to obtain the total demand schedule for this labor, which determines what demands are weakest and therefore excluded. Now it is evident from the nature of the constituent elements in this demand that the supply of each product must be restricted to such an amount as can be marketed at a price equal to the objective factor in its cost of production multiplied by the wage-rate which clears this particular labor market. Willingness to pay this much for a unit of the product is the *condition* of not being excluded from the market.[8] The prices of the different products will be to *each other* as the objective factors in their respective costs of production, but to the prices of goods made by other labor in the compound ratio of objective cost factors and wage-rates.[9]

The third of our cases — labor coöperating with other labor in several branches of production — introduces no new analytical problems. The demand from

7. There is no demand, even in theory, for a first unit of labor, so far as this product is concerned, or any other product which requires more than one unit of labor.

8. It may be noted that this also effects that allocation of resources between rival uses which, as I have maintained above, is the true function of cost of production.

9. The laborers receiving the scarcity wage thus derived from the demand for a group of products may properly be referred to as a "competing group," but other laborers who cannot compete with them may receive the same wages, if only they are as well shielded from competition. It is therefore only in a statistical sense that all in a given income-stratum can be called a group. Cairnes's idea of a small number of "non-competing groups" seems to me misleading. It is true, however, that the members of a given income-group exchange products on the terms that would prevail if they did all compete with each other.

each of the uses for which the labor is used in coöperation with other labor is derived residually as in the first case, and these demands are combined in the manner described in the preceding paragraph. Of course, it would be absurd to imply that anyone ever thinks out these relationships as a basis for action. It is not necessary that anyone should. But the cost computations which men do make and the market reactions which are thereby engendered tend to bring about the distribution of resources and the resulting system of values which this analysis leads us to expect. Merely normative these demand schedules admittedly are, but they are no less significant on that account. They are our only guiding-thread through the labyrinth of values.[1]

The time required by all the processes involved in this analysis of valuation raises some difficulties which may well be considered before we turn to the other aspects of our problem. The conclusions we reach by this kind of reasoning are true only if we can assume that men continue to have the same interests and preferences, that is, that demand remains unchanged. We all know, however, that such stability is not characteristic of the modern world.[2] Imitation and the desire for variety keep demand in what is, relatively speaking, a constant state of flux. Other changes in the underlying factors are also likely, especially if the period of adjustment is very long. Irreparable losses from the experimentation involved in this equilibrium-seeking, the impairment of natural resources, the accumulation or destruction of durable wealth, and similar developments must be regarded as normal concomitants of the passage of time. The results foretold by our theory can therefore never

1. Since demand must be an element even in long-run value, it follows that the long-cherished hope of finding an objective basis of value was an illusion.

2. Cf. J. M. Clark in the Journal of Political Economy, xxvi, 19, 20.

be expected to come to pass; they tell us what would happen if the conditions with which we started lasted long enough. If understood in this way, they are very useful, however, for they help us to understand the significance of economic changes and perhaps to modify them to our own ends.

VII. Variable Objective Factors

The theory of value so far developed gives an important place to what I have called the objective factors in cost of production, but it proceeds on the unreal assumption that these objective factors are a given datum in the problem, that variations in production do not affect them. We must now consider how values are affected by the changes in these objective factors which are so generally incident to variations in output. To discuss the causes and extent of such changes in detail would take us too far afield. I shall merely try to show how they are to be incorporated into the above theory.

Let us begin with the case of *increasing* objective cost, where additional supplies of a good are to be had only at the expense of progressively increasing amounts of labor per unit of product. Only one new principle is here involved — the importance of the margin. Since the producers of these additional units must be recompensed by the uniform value determined by the market, if they are to continue producing, it is evident that supply will have to be restricted in just the same degree that would be required if the higher objective factor applied to every unit in the supply. If labor were perfectly mobile, for example, the laborers working at a disadvantage would desert this industry until the value of the good had risen to a point where the least favored of those remaining would be getting enough for a unit of his product to offset the smaller number of units he

can produce in a given time; that is, enough to keep all the other producers at work if they too produced on these harder terms.

The case where scarce labor is needed is not essentially different. That part of demand derived from the price of the additional units, as analyzed in Section VI, is weakened by the higher objective factor which they involve, and the demand from this use has a correspondingly smaller chance of obtaining a share of the scarce labor, as compared with uses not subject to increasing cost. Supply will, therefore, be restricted till the price of the product is to the price of other products in the compound ratio of wage-rates and the objective cost factor of the *marginal* additions to output. As before, this is the necessary condition of not being excluded from this labor market. The reasoning applicable to decreasing cost is entirely analogous, except that we do not have to deal with marginal cost, but with uniformly decreasing cost.[3]

These variations in the objective cost factors consequent upon changes in the volume of production were the real subject of Marshall's memorable chapters on value. Hence the "cost curves" of his diagrams are not value curves, properly speaking; they are quantity curves, and they cannot be directly balanced or equilibrated against the demand curves for the product which *are* value curves. Marshall was not unaware of this, but believed the difficulty negligible, because the influence upon the value of any productive *agent* exerted by changes in demand for any one *use* is so small.[4] This is evidently the same kind of reasoning he applied to the problem of consumers' demand price, and it is open to

3. That is, marginal cost has to be understood in a different way. Cf. the article by Professor Meriam in this journal, xlii, 170.

4. Meaning a relatively scarce agent, of course. If no labor were relatively scarce, value would be governed by the objective factors, as we have seen, and Marshall's supply curves would be entirely adequate.

the same sort of objection. The supply price of every commodity is too low, when we ignore the increasing demand on the agents needed. The supply of each commodity is therefore not sufficiently restricted, with the result that the society seems to be consuming more than it produces. Moreover, since the buyer's demand for any good, or unit thereof, depends in part on how much he expects to need for things higher in his want-scale, a cumulative error is introduced into the whole value system. No doubt it is confusing to take account of this in analyzing the already complicated questions presented by variations in the objective cost factors, and Marshall was perhaps justified in ignoring them on this ground; but the fact remains, it seems to me, that we cannot leave the value problem there.

VIII. Efficiency Costs of Production

We are now in a position to consider the influence of efficiency costs of production. Such costs are incurred whenever any productive agent which has advantages over other agents of the same class when used for certain purposes is used for other purposes where it has not these advantages. Labor, land, and savings all afford examples of such uses. The underlying principles are much the same everywhere, but it will repay us to analyze the three factors separately. I will begin with labor, which is the simplest case.

A laborer who is able to produce a larger amount of certain things than the general run of men in that occupation earns more than they do, without affecting the value of those things. If he is to be induced to enter another occupation where he does not surpass the ordinary standard of productiveness, he must be paid as much as he could earn before. He will avoid such occupations until the unit-value of the product has risen enough to

enable him to earn his customary wages, that is, enough to offset his lowered efficiency. Of course, if other workers not specially efficient elsewhere can do this kind of work as well as he, and there are plenty of them, he will not have to be attracted into the industry at all. There will be no necessary efficiency costs of production. We are here concerned with cases where such men must be enlisted. Where it is a question of relatively scarce labor, it is evident that would-be users of such labor are at a disadvantage in the labor market when their offers have to be derived from a relatively smaller anticipated output. Fewer of them will therefore escape exclusion from the market — only those whose offers reflect a unit-value enough higher to offset the lower efficiency of labor in this branch of production.

The case of land is more complicated. Labor flows, so to speak, into the land-using occupations [5] until *marginal* production there affords no higher earnings than can be had elsewhere. The users of better land either reap a surplus themselves or pay it as rent to those from whom they hire. Now, if any of this better land is especially adapted for any particular purpose, producers wishing to use it for this purpose can offer a higher rent than others — their surplus is larger. If the others, therefore, are to obtain the use of any of this land, they will have to pay a rent which represents a larger deduction from their gross product than they really gain through the use of the land, thus putting them at a disadvantage as compared with rivals for whom the rent is no more than the physical surplus. They will, therefore, avoid this occupation until the

5. The non-land-using occupations are those which do not entail any more need for land than there would be if people preferred leisure to this form of consumption. Personal service is the most obvious example, but any occupation may be regarded as non-land-using to the extent that it merely adds further refinement to physical materials which would be consumed anyway — a large field in the modern world.

unit-value of the product is enough higher to offset the more-than-surplus part of the rent they have to pay. These particular land-products will be scarcer — and hence more valuable — because of the efficiency cost which their production involves under the given circumstances. An obvious example is the use of land in the center of crowded cities for residential purposes, in competition with the commercial uses for which its advantages are relatively much greater. Here again, it should be noted, we have in mind only cases where land possessing special advantages elsewhere *must* be utilized, if the demand for certain uses of land is to be satisfied.

This, it seems to me, is the only sense in which the rent of land can be treated as a cost. Here it does constitute something foregone in order that another good may be produced. And its relation to value is causal. The rent of land in general, however, is a very different matter. For the entrepreneur, it is true, rent is something given up in order to carry on production; but as I have already argued, the entrepreneur's outlays cannot be regarded as costs of production in any socially significant sense of that term. Rent is simply the result of the value-making forces — the desire for land-products and the scarcity of good land. It is neither a cost of production nor a cause of value, except in the limited sense described above.

Professor Bye has reached a different conclusion [6] on this point by reasoning which seems to me open to serious objection. He holds that the rent of land is the result of the same sort of competitive bidding-up of the price of a scarce agent of production that we observe in the case of certain kinds of labor. If this is true, then rent must bear the same relation to the value of land-products that the wages of scarce laborers bear to their

6. In the article already cited, pp. 39, 44.

products — not causal, but at least a factor in the compound ratio which expresses the value of land-products in terms of other things. But is it true? Is it not rather to avoid the alternative of using poorer land that men bid up the rent of superior land? When it is a question of disposing of a scarce stock of some agent, we may say that the more eager buyers force up the price by their efforts to avoid being excluded from the market, since there is not enough to go around. Land, however, is not limited in this sense. The renters of land do not face the alternative of going without land-products altogether, for there are inferior lands and inferior uses of other lands to which they can resort. Their offers, therefore, are not simply a reflection of their eagerness as consumers, but also — and chiefly — of the technical advantages that a given plot of land offers as an aid to production. Of course, a greater demand for the products of the land-using industries necessitates the use of poorer land (or poorer uses) and causes rents to rise on the better lands, but that is another matter.

The use of savings in capitalistic production resembles the case just discussed in that it is also a question of an agent which enables some laborers to produce more than others. Like good land, capital equipment "pays its way," and goods made with the aid of capital do not tend to have any higher value on that account. Interest, therefore, is a cost only in the entrepreneur sense. Socially speaking, it is not something foregone by producers in order that production may take place, but a part of the product surrendered in return for an agent which made possible a corresponding increase in that product.[7] Capitalistic production may, it is true,

7. Of course, this does not cover the whole interest problem, even on its "demand side." All I mean to imply is that, so far as capitalistic production is concerned, the "productivity" of the process is a factor in the rate of interest.

involve special costs of production, — those incurred by savers, — but, even if we accept the very doubtful proposition that such costs require compensation in the way of interest, it does not follow that the value of the products is thereby increased. The use of savings increases the output of industry by an amount at least equal to the interest paid the saver. The "cost of capital" is not a factor in the value of goods produced by the "round-about" process in the sense that such goods tend to be dearer than they would be if made otherwise, but rather in the sense that they would be cheaper if savings were so plentiful as to command a lower price than they actually do, which is by no means the same thing.

All this, be it emphasized again, applies only to savings used to finance capitalistic production. There are many uses of savings, however, where they do not increase labor's output but are to be regarded simply as a necessary ingredient, without which there can be no product at all. For the provision of brick dwelling-houses, for example, "waiting" is just as necessary as labor to make bricks and lay them, and yet that labor is not made one whit more effective by that fact.[8] Now, if society affords opportunities for the use of savings to increase the output of labor, it is evident that house-building involves a sacrifice of efficiency, and that houses will not be built unless this is made good. In other words, savers will avoid that form of investment until the value of housing is high enough to permit a deduction from it for the payment of the going rate of interest without leaving the required laborers lower wages than they could earn elsewhere. Here the pro-

8. This refers, of course, only to the waiting required to "finance" the building itself, not to any capitalistic methods of construction employed.

duct *is* reduced by the payment of interest, and hence it must be more valuable in order to enlist the needed labor. Brick houses are more valuable because they cannot be provided without the use of savings.[9]

This is not to say that *all* the extra value is due to the efficiency cost involved. Only so much of it can be thus explained as exceeds what would have to be paid if there were no capitalistic competition for the use of savings. If we assume that there is a uniform supply price for savings, then the effect of such competition would be *nil* in the long run; but if savings are supplied at increasing cost, equilibrium will be reached at a higher point in the savings market. If there is no supply price for savings, but they are limited by some other cause, the demand for house-building and similar uses will by itself enable savers to command something in the way of interest, tho much less than they would receive in a market widened by the inclusion of capitalistic competition. Since there can be no doubt that the assumption of a uniform supply price is contrary to the facts, it follows that efficiency cost is always a factor in the value of commodities requiring savings as an "ingredient."

IX. Entrepreneur "Costs"

This theory of the relation between value and the various costs encountered in the economic world seems to have no place in it for what some writers have regarded as *the* costs of goods — the expenditures of the entrepreneur. In a fundamental sense this seems to me the correct position, since these business costs do not, of themselves, throw any light on the ultimate causes of

9. Analogous reasoning applies to cases where savings are used at less than marginal efficiency, that is, where this is a necessary consequence of supplying the good at all. Fabrics made on hand looms, and commodities requiring the use of machinery but at less than ordinary load, are examples.

value; but it would be going too far to say that the cost computations and comparisons of the entrepreneur do not call for investigation. In an economy such as ours they are the process by means of which the value system implicit in the facts of a given situation, according to theoretical analysis, is eventually achieved. They are dynamic in the sense that their rôle is in a world where equilibrium has yet to be attained. This rôle is too complicated for full analysis here, but I will try to give some indication of what I conceive it to be.

The essence of the matter lies in the relation of the entrepreneur to market values. Normal values, like all others, are proximately determined by the supplies which come to market, in other words, by the final allocation of productive resources which results from the efforts of producers to maximize their incomes. The necessary readjustments are effected by the movement of laborers away from those occupations where the existing output has a market value which yields the producers a relatively low income. In an entrepreneur economy, however, these basic forces do not interact directly upon each other. The laborers do not act in response to the *earnings resulting* from the determined value of a marketed output produced with known objective cost factors, but in response to *offers of employment* which reflect the entrepreneur's belief, based on estimates of all or most of these relevant items, that he can make at least as much profit in this industry as anywhere else. Under these circumstances it is not so much differences in wages as differences in profits that brings about the needed transfers of productive resources.[1]

1. Using "profits" in the broad sense of the entrepreneur's residual income — after paying for the other factors of production at the contractual rates. In this sense, profits do not disappear in the static state, some entrepreneur income being necessary as a remuneration for his work of supervision.

Only when laborers are reluctant to make the changes desired by the entrepreneurs, does a decline in wages become a factor in their choice of another occupation.

If the entrepreneur has been mistaken in his estimates concerning any of the items just mentioned, the difference between what he pays out and what he receives will be more or less than he expected, and he will have reason for expanding or contracting his activities in this particular industry. Such discrepancies may also arise from another cause. Where relatively scarce labor is required, the entrepreneur must make commitments as to the wage-premium to be paid. If excessive optimism on his part is paralleled by similar mistakes on the part of entrepreneurs desiring this labor for other uses, the wage may be raised so high by competition that the selling price of the product, after deducting the wages due the coöperating laborers, is not enough to pay the promised premium and leave the entrepreneur adequate compensation for himself. Or the wage-premium may not be bid up too high, but the entrepreneurs in this particular industry may obtain too large a share of the scarce labor, with similar effects on their profits. In any event we have a situation analogous to a true case of cost: more is given up than is obtained in return, and the venture is not worth repeating.

This, it seems to me, is the true rôle of entrepreneur expenses. They are the proximate bases of the entrepreneur activity which, in a society like ours, determines the direction of productive effort and eventually achieves the theoretical norms of value. We need to take them into account in order to understand how any given dynamic situation has come about, but not to explain the long-run results of competitive industry.

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CYCLICAL FLUCTUATIONS IN AGRICULTURE AND INDUSTRY IN RUSSIA, 1869–1926 [1]

SUMMARY

I. Importance for Russia of relation between agricultural and industrial cycles. — Concepts and methods of the present paper, 565. — II. Characteristics of Russia's economic system, 574. — Succession of events, 1869–1914, 576. — Resemblances with other countries and differences, 579. — Examination of correlations between crops and cycles, 580. — Summary of conclusions for the pre-war period, 586. — III. Main events of 1913–26, 589. — Complex changes and a transition period, 591.

I

THE relation between agricultural and industrial cycles, which was discussed by Jevons several decades ago and which is receiving today the renewed attention of economic investigators,[2] is obviously of fundamental importance in the economic life of Russia, where agriculture furnishes the main occupation of the people. This problem has an important practical aspect in Russia because of the magnitude of the year-to-year fluctuations in crop yields in this country. Hence it is natural that the relation between cyclical fluctuations in agriculture and in industry should have been for many years a subject of discussion among Russian economists.[3] Two opposing views concerning this re-

1. This article presents, in summary, certain materials from the author's book, The Business Conjuncture. It has been translated from the Russian by Dr. Simon Kuznets, of the National Bureau of Economic Research.

2. Cf. recent treatises by H. L. Moore, A. C. Pigou, A. Robertson, H. Dietzel and Yves Guyot.

3. Without attempting to enumerate all those who have touched upon this topic, I may mention N. A. Kablukov, M. I. Tugan-Baranovski, N. Danielson (N-on), V. K. Dmitriev, and at present V. G. Groman, A. Finn-Enotaevski and V. M. Stein.

lationship have been advanced, and the historical division upon this question persists today. One group, headed by Tugan-Baranovski, asserts that the cyclical fluctuations in Russian trade and industry are closely related to the cycles in the industrial world outside of Russia. Economic cycles within and without Russia, they contend, synchronize in time and are conditioned by the same causes. "In our industry there are to be observed fluctuations quite similar to the fluctuations in all the capitalistic countries. These changes cannot be assigned to fluctuations in the crops." The other group, represented by Kablukov and Danielson, considers the fluctuations in Russian industry and commerce to be determined almost wholly by variations in the size of crops. Thus Danielson [4] sees in the crops the basic factor that determines the outlook for the whole economic system of the country. "Business activity is in direct and close connection with agriculture; the less productive is agricultural labor the smaller, all other things being equal, is the volume of exchange." Crops, from this view, are the main dynamic factor in our economic system, and their fluctuations determine the business conjuncture of the country.

But what has been the nature of the actual fluctuations in the economic life of Russia? What connection have these fluctuations had with the world business conjuncture on the one hand, with the fluctuations in Russian agriculture on the other? Answers to these questions can be had only from a careful statistical analysis of factual data, covering as long a period of time as possible. In attempting such an analysis I shall survey the period from 1869 to 1926. Before beginning the analysis of facts I shall summarize my chief theoreti-

4. Sketches of our Economic Life after the Reform, Petersburg, 1893.

cal assumptions and shall indicate the peculiarities of the method of analysis to be used.

First as to the concept of conjuncture. By conjuncture we understand "the sweeping, more or less periodic oscillatory movements of the whole national economic system which are characteristic of the exchange economy in general, and particularly of the capitalist economy. These movements are accompanied by quantitative and qualitative changes in a country's economic system. They manifest themselves most conspicuously in markets, prices, and incomes, causing fluctuations in prices and shifts in price relations." The essence of the conjunctural movements is found in these shifts in price relations.

These shifts, of four types, occur as follows:

1. The prices of production goods rise in periods of prosperity and decline in periods of depression more than do the prices of goods for immediate consumption. Thus in periods of prosperity consumption goods depreciate as compared with means of production, while during depression the reverse movement occurs.

2. Prices of industrial commodities fluctuate more widely than do the prices of agricultural products. In periods of prosperity agricultural products decline in value, as compared with industrial products, while during depression the reverse is true. We have thus alternating periods of divergence [5] and convergence in the levels of agricultural and industrial prices.

3. Prices of raw materials fluctuate more widely than do those of semi-finished goods, and still more widely than do those of finished products. During prosperity finished products decline in value in comparison with semi-finished goods, and even more so in comparison

5. This separation is particularly significant in countries marked by considerable fluctuations in crop yields.

with raw materials. During depression these movements are reversed.

4. The tempo of changes in commodity prices differs materially from that of changes in the rate of interest. The rate of interest is more stable than commodity prices, and during periods of prosperity the rate of interest lags behind commodity prices. As a result, the "purchasing power" of the market rate of interest declines during prosperity and rises during depression.

These alterations in price relationships tend to cause changes in the distribution of the national income. First, because of the "separation" of agricultural and industrial prices, there occurs a redistribution of the national income as between industry and agriculture (or between city and country). During prosperity the redistribution favors industry (the city); during depression it favors agriculture (the country).

Second, since prices of production goods rise more rapidly than those of consumption goods, there is a redistribution of the national income between the industries producing capital goods and those producing goods in shape for final consumption. The former are favored during prosperity, the latter during depression.

Furthermore, because of the fact that commodity prices rise more rapidly than does the rate of interest, there is a redistribution between debtors and creditors. This movement favors debtors during prosperity, and creditors during depression.

Of greatest interest are the processes of redistribution between producers and consumers, and between capitalistic entrepreneurs and employees. Periods of expansion are characterized by a concentration of national income, with a tendency toward an increase in the differences among the amounts received by the various income classes, while periods of depression are marked

by a tendency toward the diffusion and equalization of the national income.[6]

These various processes of redistribution result in considerable changes both in the production and distribution of productive forces and in the tendencies in mass consumption. We shall deal briefly with the latter point.

Periods of economic expansion (prosperity) involve an increase in the size of the national income and, as has been pointed out, a redistribution of income marked by concentration and differentiation, while depression is accompanied by a decrease in the size of the national income and a redistribution in the direction of diffusion and equalization. Conjunctural fluctuations thus influence mass consumption through changes in the size of the national income and through changes in the distribution of the national income. The first tendency is apparent in the increase of mass consumption during prosperity and in the marked increase in the consumption of commodities for which the demand is elastic. During such periods there is, thus, a general increase in the elasticity of mass consumption.[7] During periods of depression this movement is reversed, and there is a lowering of the average elasticity of mass consumption. If we had knowledge of the scale of elasticity we could describe more concretely these shifts in the volume of mass consumption.[8]

But the tendency toward changes in the elasticity of mass consumption is complicated by the redistributions of national income which take the form of concentration

6. This movement is discussed in greater detail in The Business Conjuncture by S. A. Pervushin, pp. 29–30.

7. For a discussion of the so-called law of rising elasticity, see S. A. Pervushin, Sketches in the Theory of Mass Consumption, Leningrad, 1920. This law is a direct deduction from the second law of Gossen.

8. Ibid., Sketch 3, chap. 7.

and differentiation in prosperity, diffusion and equalization in depression. This factor affects the proportion of income spent on immediate personal consumption, as compared with the amounts saved and invested. Concentration of national income results in both an absolute and a relative increase of private savings and of subsequent investments. Thus, during periods of prosperity the ratio of accumulation to consumption is increased (with a tendency toward over-capitalization) while the diffusion of income during depression has the opposite effect.

Fluctuations in income distribution also cause considerable changes in the character and volume of personal consumption. The concentration of the national income results, usually, in an absolute and relative decline in the demand for those articles of mass consumption for which demand is most elastic, such as meat, milk, tea, sugar, alcoholic drinks, shoes and clothing. At the same time the absolute volume of consumption of coarse commodities marked by inelastic demand, such as bread and potatoes, does not decline. It may even increase, for with the curtailment of real income people may have to forego the more expensive meat diet and confine themselves to the cheaper vegetable diet. Since the absolute volume of total mass consumption decreases with a concentration of income, the proportion spent on such coarse products increases. The same concentration results, of course, in a relative and absolute increase in the consumption of luxuries, such as expensive wine, fruits, costly cloth and furs.

As a result of these shifts a period of prosperity is marked by a peculiar differentiation of consumption. The use both of coarse commodities of inelastic demand and of luxuries (that is, of the extreme elements in the consumer's budget) is increasing at the expense of the

widely used commodities of elastic demand. The diffusion of the national income during depression brings, on the contrary, an absolute diminution in the consumption of coarse commodities of inelastic demand and of luxuries, and increases the importance of the middle elements of the consumer's budget. These shifts, together with those due to changes in the absolute size of the national income, represent the effect on mass consumption of conjunctural fluctuations.

As regards production, the following shifts are to be observed, in addition to the familiar rise and decline in the total volume of goods produced.

1. Since the production of capital goods fluctuates more widely than the production of consumers' goods, there occurs a redistribution of productive forces among the different industrial groups.

2. During prosperity there is a tendency toward the fullest utilization of the existing equipment, which includes the "backward" enterprises. As a result, the concentration of production slows down, to grow stronger during depression.

3. Because of the decline in the average quality of industrial equipment and because of the employment of labor that is on the average less efficient, the productivity of labor tends to decline in prosperity. A corresponding increase in productivity occurs during depression.

In the above paragraphs there have been sketched the main changes in a country's economic system which are due to conjunctural fluctuations. Contrary to the common notion that these shifts are irregular and anarchical (see, for example, Tugan-Baranovski), they are all quite uniform, tending to repeat themselves from one cycle to another. During depression there is an unbalanced accumulation of factors that prepare the next

expansion, and during prosperity the same unbalanced accumulation of factors preparing the next depression. Of course, the bearing and significance of the tendency described above is not the same for all these factors. Some exercise but a mild and short-lived influence; they contain in themselves forces that cancel their effects. Some originate in the deepest layers of the economic system (production), while others come mostly from the surface (foreign exchange and circulation). As a rule, except for some critical disruptions of the economic system, the fluctuations of conjuncture come, not from the deepest, but from the surface layers (that is, those of circulation), but lead subsequently to reflected shifts in the underlying regions (in particular to a disproportion between accumulation and consumption).

Of the factors in the sphere of circulation, that of money and credit is the most important in giving rise to conjuncture. The influence of this factor is not localized. On the contrary, it possesses the peculiar power of rapid, one-sided, automatic expansion and of a sweeping extension over all the spheres of the national economic system. Only when this factor is in operation can fundamental disturbances arise, such maladjustments as may turn an ordinary depression into a crisis.

But neither the shifts discussed above nor the influences of currency and credit assure a rigid periodicity and continuity of cyclical movements. A revival once begun will develop automatically, thanks to credit expansion, and will end without fail in a depression, possibly in a crisis; but a prompt recovery does not necessarily follow a depression. A revival may not appear for a considerable period of time, as is shown by variations in the duration of periods of depression.[9]

9. This period varied from 2–5 months in 1908 to 12–15 years in the eighties of the last century.

There is always a rupture between successive cycles, an intercession of an outside force. It is true, of course, that during depression the factors that make for revival do not die away altogether, but the tempo of their movements slows down considerably and their effectiveness declines.

In order that the inertia of depression may be overcome and the spirit of economic enterprise and initiative aroused, the profit-making opportunities in business should increase materially in a short period of time. This necessary stimulus can be given only by the intercession of a powerful disturbing force. Among such disturbing forces are the crops. Because of the complexity of the influences of the crops, and because of their great importance in our discussion, we shall treat this question in detail.

In addition to the immediate influence of fluctuations in crops and changes in grain prices on the size of the national income, and thus on the volume of demand by the agricultural population, these changes are not without bearing on the volume and character of the demand by the urban population. Changes in grain prices result in changes in the purchasing power of city people and call forth a redistribution of their expenditures. Furthermore, consumer demand is affected by the "social shifts" that are caused by fluctuations in crop yields, specifically by changes in the proportion of the national income going to the urban population and by the redistribution of income among different groups within the urban and the rural divisions. The composition of expenditures of city people differs from that of rural inhabitants,[1] and thus the periodic fluctuations

1. Cf. S. A. Pervushin, Sketches in the Theory of Mass Consumption, 1922; also, A Theory of Mass Alcoholism in Connection with the Theory of Wants, 1913, and Influence of Crops and of Other Economic Factors on the Consumption of Alcoholic Beverages in Russia, 1910.

in the relative shares of the two groups will result in general changes in the composition of mass consumption in the country at large.

Among the other influences we should note fluctuations in railroad freight tonnage, in the cost of production of manufactured goods (due to changes in the cost of agricultural raw materials), changes in the rate of capital accumulation in the country (resulting from variations in the volume of free capital coming in from agriculture, this latter depending on the volume of sales at home and abroad), and, finally, fluctuations in tax returns from agriculture. It should be noted that the periodic rise and fall in the rate of accumulation of free capital in agriculture is not of equal significance in the different phases of the cycle. The increase in volume is of greater importance in causing general business expansion than is the decline in volume in relation to the resulting depression. For this reason we frequently find a clear connection between a period of business prosperity and preceding agricultural prosperity, while bad times in agriculture are not necessarily followed by a general depression. In conclusion, we should take account of the purely psychological influences of fluctuations in crop yields, these influences depending not only on the size of the actual crop but also on crop prospects.

The complicating influence of outside factors, and especially the complex effects of agricultural fluctuations, account for the variability which fluctuations in conjuncture show both in time (periodicity) and in space. Cycles are neither periodic nor world-wide. The American movements differ from the European.[2] As we shall see below, the Russian cycles have had peculiar features which have been particularly marked

2. Business Annals, Introduction by Wesley C. Mitchell.

since the nineties and most conspicuous in the twentieth century. In general, we may distinguish three types of conjunctural movements, the American, the Western European (England, France, Germany) and the Eastern European (Russia). The course of business cycles in eastern Asia has not yet been adequately investigated. However, the existing data lead one to believe that these movements in Asiatic countries (with silver currency) do not coincide with those of Europe or of the United States. Among these four types of conjunctural fluctuations the movements in pre-war Russia are sufficiently peculiar to make their study of considerable theoretical and practical interest. The second part of the present paper is devoted to a discussion of these business fluctuations in Russia during the period from 1869 to 1926.

II

Since in our methodology we follow to a large extent an established technique, we shall discuss the procedure but briefly.[3] The following specific traits of the Russian economic system are to be noticed:

1. The large size of its territory and the heterogeneous nature of its parts.

2. The industrial-agricultural character of the country, which contains a number of small agricultural enterprises and a decentralized internal market.

3. The extreme variability of certain elements in this system (including the seasonal element).

4. The exceptionally important rôle, in this economy, of the state and of the factor of rational planning.

5. The reconstructive character of its processes in the post-revolutionary period since 1921.

Among these features the largest weight is to be

3. S. A. Pervushin, The Business Conjuncture, pt. 1, chap. 3, pp. 72–150.

attached to the second, that is, to the industrial-agricultural composition of the system, which rests on a decentralized (and to a large extent rural) market for sale. Consequently the most important part of the analysis of Russian conjuncture is the study of the connection between fluctuations in agriculture and those in industry and trade.

Closely connected with the industrial-agricultural character of the Russian economic system is its variability, a fact that necessitates the study of fluctuations on a scale of at least quarterly units. And just as the variability of the conjuncture necessitates a study in terms of short periods of time, the large size and the heterogeneity of the territory call for a regional study. Both these requirements are especially pressing in studying the economics of the transition period following the revolution, when both the variability and the lack of connection among the separate economic regions were particularly prominent.

The last peculiar feature of the Russian economic system is its close dependence upon the state, especially upon the state economy. An exceptional part has been played by the latter in the period since the revolution — the era of nationalization of banks, land and industry, and of their "budget" financing. This forces us to pay particular attention to the so-called *rational* factor, that is, to the economic and financial policy of the state.

All these peculiarities render the movements in Russia too complex to be covered properly by three or four representative curves (as is done in the barometer and the index of trade of the Harvard School) and make necessary a number of specific indexes covering the different fields of economic activity. Here we shall note only those indexes that are needed to trace the movements in agriculture.

It has been customary to employ only the crop series in describing agricultural changes, but this procedure is inadequate. While it is the most important factor in the welfare of peasants, the size of crops is not a perfect indicator of the fluctuations in agriculture. Years of largest crops are not always years of greatest prosperity in the country, and *vice versa*. When good crops follow lean years they exercise their influence only in the following year, and this influence is generally insignificant. Quite often two years, one of very poor crops and the other of very good crops, cancel one another. To picture the movements in agriculture one must take a congeries of symptoms. In our investigation we use, besides the crops series and the series of agricultural prices, the data on exports of grains and on the marriage rate in villages.[4]

Now we shall deal with the facts. The leading events during the period 1869–1914 may be summarized as follows.

1. There was an expansion in the beginning of the seventies (1869–70) and a recession in 1871–72. This recession is apparent in the fall in the consumption of pig iron, in the decline in railroad building and in the volume of exports, in the increase of failures and in the fall of yarn and cotton-cloth prices. Thus per capita consumption of pig iron was .42 poods in 1871 and .57 in 1872, as compared with .76 in 1870. The increase in railroad net was 2612 versts in 1870, continued on a high level in 1871 (2429), but fell in 1872 to 832 versts. A good description of the economic situation, particularly in the textile industry, during this recession was given by J. Garelin: "The end of 1872 and the beginning of 1873 were marked by bankruptcies. This was

4. Cf. S. A. Pervushin, Influence of Crops on Consumption of Alcoholic Beverages in Russia, Moscow, 1909. Cf. also "Changes in the Consumption of Alcohol in Russia," in Russian Thought, vol. v (1912).

not to be explained by the competition of foreign manufacturers. The main cause of bad trade was the enormous output of cotton cloth (print) that had to be sold." [5] This description holds true for other branches of trade.

2. The middle seventies were characterized by deep depression, the trough coming in 1876. During this period there was a decline in the consumption of pig iron, a fall in the prices of cotton, cotton yarn and cotton cloth, a sharp decline in railroad mileage added and a rise in bankruptcies. According to the data of the Moscow Department of the Council of Trade and Manufactures the number of failures rose from 68 in 1874 to 113 in 1876. (Total debits were 5.3 millions of roubles in 1874, 10.95 in 1875, 31.5 in 1876.) A contemporary report reads: "At present there is not a firm in Moscow that did not suffer considerable losses and that was not forced to limit its operations. The reports from the provinces are still more discouraging than for Moscow."

3. This period was followed by a new revival and expansion to the end of the seventies, the peak coming in 1878–79. "An extraordinary expansion of output in all the old factories and the spread of new ones . . . had reached the peak in the middle of 1879, and continued until 1880." [6] The magnitude of this expansion is indicated by the following figures. The addition to the railroad net had increased from 758 versts in 1875 and 558 in 1876 to 1320 versts in 1877 and 1182 in 1878. The consumption of pig iron, which fell to .60 poods per capita in 1877, rose again to .71 in 1879. Prices for print cloth rose from 7 copeks in 1877 to 8.5 in 1878 and 10.5 in 1879. The general index reaches 1.42 in 1878 (that is, 42 per cent higher than in 1870).

5 The City Ivanovo-Vosnesensk, ii, 60.
6. V. Besobrasov, The Economic Life of Russia, i, 277.

One of the indirect indexes of the business prosperity of 1878–79 is found in the increase in consumption of alcoholic beverages from .76 in 1876 and .74 in 1877 to .86 in 1879.

4. The succeeding depression lasted from 1882 to 1886, with the trough in 1886. "A number of factories stopped working, others reduced output. . . . The reaction was so thoro that a number of factory workers returned to their former villages and took up the plow."[7]

The per capita consumption of pig iron fell to .53 in 1885 as compared with .59 in 1882, .66 in 1880 and .76 in 1870. The consumption of cotton declined from 8681 thousands of poods in 1883 to 6918 in 1884 and 7086 in 1885. Prices for print cloth fell from 10.5 copeks in 1879 to 7.75 in 1881, and as low as 5.5 to 5.75 copeks in 1884–86. The increase in the railroad net stood at low levels: 312 in 1882, 629 in 1883, 808 in 1884. The total trade index, which rose from 1.0 in 1870 to 1.42 in 1878, stood at the same level up to 1888 (1.42 to 1.51).

5. Brief prosperity during the period 1887–89 is registered in the increase of pig-iron output and coal production, in the rise in cotton consumption, and in an increase in print-cloth prices. The break came in 1889.

6. A depression during 1891–92 is indicated by a decline in iron consumption, a fall in the consumption of cotton and a rise in the number of bankruptcies and in unemployment. "The output of country artisans and of factories has been reduced."[8] In a number of other gubernias of the central industrial region there was reported a curtailment of output in the factories, which cut off the earnings of a number of workers. The earnings of workers in hand and migratory trades (carpen-

7. Statistical Yearbook of the Moscow Zemstwo, 1887, p. 18.

8. Moscow Gubernia, Report of the Tax Inspector (Supplements to the Report of the Department of Collections for 1891, p. 2).

ters, bricklayers and cab-drivers) also declined.[9] The index of conjuncture, which had reached the level of 1.757 in 1888, declined to a low of 1.08 in 1891, although there was a temporary halt in 1897–98.

7. The period of expansion which began in 1893 continued to a peak in 1899, although there was a temporary halt in 1897–98. This expansion is reflected in all the series relating to agriculture, industry and trade. The index of conjuncture rises precipitately from 1.87 in 1893 to 3.32 in 1899.

8. This long period of prosperity was followed by the crisis of 1900 and the protracted depression of 1902–08, with another crisis in 1905. The long depression is reflected in most of our indexes. The index of conjuncture, having reached 3.32 in 1899, showed scarcely a rise until 1910. Only the years 1906–07 are marked by an upward movement. This change, which is at first glance incomprehensible, is explained largely by the preceding break of 1904–05, which was due to the war and the revolution.

9. Our period ends with renewed expansion between 1909 and 1913 (with a halt in 1911–12). This expansion was not equally pronounced for industries in the producers' goods and in the consumers' goods groups.

If now we summarize our conclusions from the analysis of the factual material and compare them with the movements of business in Western Europe,[1] we shall see that the wave-like changes of conjuncture in the West and in Russia were closely alike in the seventies and in the eighties. In the nineties there was also a degree of similarity (the rise in the second half of the decade and the crisis of 1900 are common). But, as compared with the preceding decades, the Russian

9. Moscow Gubernia, Report of the Tax Inspector, p. 18.
1. S. A. Pervushin, The Business Conjuncture, p. 186.

cycles in the nineties depart materially from the Western European pattern. These deviations are to be seen in the retardations of 1891–92 and 1897–98. One of these was observed in Western Europe in a much milder form, and the other was altogether absent. In addition, the whole Russian cycle of the nineties is "shifted to the left" as compared with that in Western Europe: it begins and ends earlier. The symptoms of the end of prosperity had appeared on the Russian stock exchange by 1898. In the twentieth century the Russian movements deviate still more widely from the Western pattern. After the crisis of 1901–02 (which was also felt in Western Europe), signs of revival appeared in Russia in 1903. These were absent in the West. From the beginning of 1904 (that is, before the war and the revolution) Russia entered a long spell of depression, while at that time the West was in the stage of vigorous prosperity. Only in 1909 did Russia enter the phase of expansion which was common to the Western nations. In this last expansion there were, however, several peculiarities distinguishing it from the parallel prosperity in Western Europe. After the halt of 1911–12, Russian prosperity continued into 1913 and 1914, while the West was passing through a depression.

This survey indicates that the fluctuations in the economic life of Russia were marked by numerous peculiarities. The main reasons for these may be found, one suspects, in the fluctuations of Russian agriculture, particularly in the changes in the size of crops and in grain prices. With reference to these movements the following observations may be made. Crops larger than the average occurred in the years 1870–74, 1877–78, 1881, 1883–84, 1886–88, 1893–96, 1899, 1902, 1904, 1909–10, 1912–13. The following years were marked by crops below the average size: 1875–76, 1879–80, 1885,

1889–92, 1897, 1900–01, 1903, 1905–08, 1911. The maximum crops were in 1870, 1887, 1893–94, 1899, 1904, 1909–10, 1912–13; the lowest came in 1875, 1885, 1891, 1901, 1906. A mere juxtaposition of these dates with those of fluctuations in the business conjuncture reveals no close connection between the two.

This first impression of the absence of any connection (or rather of the existence of but a weak one) is supported also by the coefficients of total correlation between the series for crops and the basic indexes of business conjuncture, such as cotton and pig-iron consumption, imports of raw materials, and so forth. Thus the correlation between per capita consumption of pig iron and the crops of the preceding year is only +.19 (1871–1913), between the curve of additions to railroad net and crops, +.15. The corresponding coefficients when crops are compared with imports of raw materials and with lending operations of the banks (discounts) are, respectively, +.41 and +.10. And comparison of crops for preceding years with the current consumption of cotton yields a correlation coefficient of +.01.

Elementary computations of this kind are used even now to support the conclusion that there is no connection between the movements in trade and agriculture in Russia.[2] But such an inference is incorrect. The methods cited above are effective only where there is a uniform and constant relation, not a changing one.[3] But the connection between the phenomena discussed is, as was noted above, quite complicated and of changing character. In its concrete manifestation it is a resultant of a whole congeries of direct and indirect influences, hence the variations which make it impossible

2. See the review of my book by N. D. Kondratieff, in Problems of Economic Conditions, issue ii, 1926.

3. Nor should it be cumulative, to use the term of Karsten, following Edge.

to measure this relation by means of simple coefficients of correlation. It had certain characteristics and a certain degree of regularity in the seventies and eighties, and quite different ones in the first decade of the present century. Thus a comparison that lumps these periods together is not effective. Furthermore, each current year is under the influence of the crop, not of one year alone but of two, three, often four years (the current and preceding years and the prospective future). Quite often two successive years (a poor and a rich one) cancel each other's effects. In all such comparisons we should take also into account preceding and succeeding years, and thus trace correlation with a whole group of years rather than with one.

In view of these considerations, developed at greater detail in my Russian works,[4] I attempted to apply more complicated methods of correlation, by breaking up the total period into several shorter ones, by employing the so-called sliding coefficient of correlation, and by comparing the fluctuations in conjuncture during a current year with the crops of a number of years. The results of these more refined computations are discussed below.

In computing a sliding coefficient of correlation between per capita consumption of iron and the crops (the latter preceding by two years), I noticed that the correlation was high all through the period except during the nineties, when its sign changes, although the absolute measure remains high. If we group together the periods during which the correlation coefficient kept its sign, we obtain the following results. For the decade 1894–1902 (crops 1892–1900) the coefficient is −.6281; for 1871–1913 (crops 1864–1911) the coeffi-

4. See The Business Conjuncture, and an article, "The Basic Questions in the Theory and Methodology of Conjunctures," in Planovoie Khosiaistwo, 1926, no. 12.

cient is +.6555. (The decade of the nineties has been eliminated in securing the last result.) It is clear now why the coefficient computed for the whole period obscured the existing connection. The presence of a connection is corroborated also by the growing cumulative sums of the *xy* products (method of Professor Jastremski). In this cumulative series there are two points of change. In 1893 there is a change from rise to fall, and in 1902 there is a reverse movement when the decline changes to a rise. Were these nine years omitted we would have obtained an uninterrupted growth of the cumulative sum of the *xy* products, a sure sign of constant positive correlation.[5]

Let us investigate now the correlation of crops (expressed as multiples of amounts sown) with the changes in the railroad net (simultaneous items). Here we observe the same change, except that the year of the break comes in 1900. This is again clearly shown by the method of Professor Jastremski. The cumulative sum of the products grows steadily, to start falling from 1900 on. This change explains why the coefficient of correlation based on the entire period is not significant. The computations for the two periods yield: for 1867–1900, $r = +.5563$; for 1901–12, $r = -.7584$. If we smooth the series (using a three-year moving average) we obtain the same change in the coefficient.

In the two cases mentioned we did not obtain any higher coefficients by changing the duration of lag or lead, and there was thus no reason to correlate with crops for groups of years. But it is different in the comparisons of dividends and crops. The coefficient for simultaneous correlation is +.3999; with crops preceding by a year, the coefficient is +.3035. We can

5. O. P. Kramer, "On the Study of Curves of Conjuncture," Planovoie Khosiaistwo, 1926, no. 12.

now get a series of crops, each item being the sum for two consecutive years, so weighted as to yield the highest correlation with the series of dividends. The best selection of weights for the given year (weight = k) and for the preceding year (weight = $1 - k$) is given by Spearman's formula:

$$k = \frac{\sigma_b (r_{xa} - r_{xb} \cdot r_{ab})}{\sigma_b (r_{xa} - r_{xb} \cdot r_{ab}) + \sigma_a (r_{xb} - r_{xa} \cdot r_{ab})} .$$

In our case we obtain k equal to .58, and $1 - k$ equal to .42. The series computed with these weights yields an r of + .4918, measuring the relation between crop yields and dividends of business enterprises. The sum of the products grows constantly from 1890 to 1910; then comes a break and a decline. This suggests that for the period 1890–1910 the connection was stronger. Indeed, the r for this period is +.6180.

In correlating cotton consumption and crops we have obtained less favorable results. Still, some proof of an existing connection is given by an r of +.4262 (based on simultaneous items). In order to test whether this correlation was not due to accidental coincidence of independent changes, we studied the relationship between the analogous phases of the wave-like motions in both of the curves. This operation was carried through in the following fashion.

1. We smoothed the deviations from trends twice over (two items in the average) in order to eliminate the small ripples.
2. We fixed the peaks and the troughs in each wave.
3. We then
   (*a*) computed coefficients of correlation between the distances separating these turning-points;
   (*b*) determined by least squares the best wave length, and correlated deviations from the corresponding fit.

The results of this procedure, applied to two pairs, are as follows:

Series Correlated	Coefficients of Correlation	
	Between distances separating turning-points	Between deviations from length of semi-wave fixed as normal
Addition to railroad net, and crops	+.9713	+.8902
Per capita consumption of iron, and crops.	+.9389	+.4130

These results, as well as the others cited above, favor the presumption of a connection.

The more refined study[6] of the problem is not yet complete, but the results cited indicate that the movements of agriculture exert a material influence on the changes in business and production. The apparent connection is weak, not only because of the complexity and changing character of the relationship, but also because the movements in agriculture reflect not only changes in grain crops and in grain prices, but also the yields and prices of technical cultures, the returns from stock breeding and changes in the business character of agriculture (that is, in the size of the share of the product that is destined for the market). The resultant of all these influences cannot be broken up mechanically into its constituent elements. The best indexes of agricultural movements, as functions of the three factors of total output, prices and salability, are grain exports (pre-war period) and state collected stocks for twelve basic commodities (grain, cattle, raw cultures) for the post-war period.

We have therefore attempted to add to the above analysis a parallel study of another group of indexes,

6. In this more refined investigation of the connection between the business conjuncture and the movements in agriculture the author benefited by the coöperation of his colleagues in the Conjuncture Council of the State Planning Commission, Professor E. E. Slutski, S. P. Bobrov, and Miss O. P. Kramer, to all of whom he expresses his sincere gratitude.

in particular to compare the changes in net incomes of corporations with the movements in grain exports for 1890–1914. We have observed quite a close concurrence. Thus the expansion of 1895–99 is preceded by the large crops and growth of exports during 1893–95; the revival of 1903–04 is preceded by the increase in exports of 1902–03; and the rise of 1910–13, by the good crops, large exports and high grain prices of 1908–12.[7]

The close connection between the size of grain exports and the fluctuations in the business life of the country, and the strengthening of this connection since the beginning of the twentieth century, show that the basic influence of Russian agriculture on general economic conditions does not consist of changes in the purchasing power of the villages as determined by fluctuations in crops. It is rather the fluctuations in the accumulation of pecuniary capital (money balances) in agriculture, determined by the size of exports, crops and prices, which call forth corresponding changes, first in the money market (discount rate) and then in the market for capital (prices of bonds and shares on the stock exchange and volume of new shares issued). This basic influence is more conspicuous as a stimulus to revival than as a cause of depression. In the latter it shows itself in a much weaker form, or is not apparent at all.

We can now summarize our analysis of the movements in Russian economic life in the pre-war period.

1. The analysis of movements during the period 1871–1914 establishes the existence of more or less regular periodic fluctuations, affecting the economic system as a whole. The periods of prosperity (expansion) fall in 1870–71, 1879–81, 1887–89, 1893–99, 1909–14; the periods of depression, in 1872–78 (trough, 1876), 1882–86, 1890–92, 1897 (brief halt), 1900–08.

7. The Business Conjuncture, pp. 192–193.

2. Altho these fluctuations affect the whole economic system of the country, they vary in intensity in different branches of production, and the degree of difference in intensity varies from phase to phase of the conjunctural movements. In particular, the industries producing consumers' goods (especially textiles) are less affected than are industries manufacturing producers' goods. But this difference cannot be considered a feature peculiar to Russian conjunctures. The observed discrepancies are within the limits of those recorded for Western Europe, which have been noted frequently in scientific literature.

3. The periodic fluctuations of the Russian pre-war conjuncture were determined by two major influences — the fluctuations in world conjunctures (the so-called business cycles) and the changes in the money returns of Russian agriculture. The latter were in their turn determined by fluctuations in crops, grain prices and exports, mainly of bread grains.

4. World business cycles affect the Russian conjuncture mainly thro the influence of conditions in the world markets for money and capital upon industrial and governmental finances in Russia. Periodic financial fluctuations in the West are reflected in the financing of Russian state activities and of Russian industry.

5. The effect of Russian agricultural conditions on the general economic life of the country appears as a resultant of a great number of direct and indirect influences, of which the most important are:

(*a*) Changes in the purchasing power of rural and urban populations, which result from changes in the size of crops and in the prices of bread grains;

(*b*) Changes in the shares of the urban and rural populations in the national income, and corresponding rearrangements in the system of mass consumption;

(*c*) Changes in the amount of free capital accumulated in agriculture, resulting from fluctuations in crops, in grain prices and in salability. These changes are reflected in part in fluctuations in the value of grain exports. It is in this way that the influence of agriculture is felt in credit and money markets.

6. This last influence of agricultural fluctuations on the economic life of the country is the most important. It is peculiar in that it appears most conspicuously as a stimulus to expansion. As a factor of depression its manifestations are much weaker.

7. Being the resultant of these two influences (world conjuncture and fluctuations in Russian agriculture), the movements in Russian economic life follow a path that is identical neither with that of fluctuations in the economic life of the world nor with that of Russian agriculture (still less so with changes in crops). The mathematical analysis of the connection between the series yields a rather complicated relationship, scarcely revealed by the simple coefficients of correlation. Only the more complicated methods (the quadrature method of Edge and sliding coefficients) enable the connection to be traced.

8. The relative weights of these two influences vary during the different periods of Russia's economic life. Thus the fluctuations in the seventies and eighties showed the greatest resemblance to those in Western Europe, and had essentially the same motivating forces. The Russian cycle of the nineties was quite different. It was shifted to the left, as compared to the cycle in Western Europe, and had its trough in 1897. But the most conspicuous differences between the Western and the Russian conjunctures were to be observed during the period 1900–14.

9. A detailed analysis of this last pre-war period shows a close relationship between the movements in the economic life of Russia since 1900 and the fluctuations in Russian agriculture. (This connection was disturbed only in 1904–05, when the effects of war and revolution were felt.) The closest connection is found when crop changes are correlated with the changes in the volume of Russian exports (these representing the results of fluctuations in crops, in prices and in the vendibility of agricultural products). This conclusion is supported by a series of parallel studies.

III

In conclusion we shall deal briefly with the main events of the period of war and revolution (1913–26).

The expansion had continued thro the first years of the war, being somewhat stimulated by extensive money issues and large war contracts.[8] But as early as 1916 the detrimental influences of the war on the national economy became apparent in the decline in the productivity of industrial labor, in the decrease in the area sown, and in the depreciation of money as a result of the expanding issues of paper currency. The degenerative processes were intensified during the first years of the revolution and the civil war, when the total output of the basic industries had fallen to a small percentage of the pre-war level, and the purchasing power of the rouble was being expressed in fractions of copeks. The worst effects of these processes were felt in 1920–21, which was the breaking-point. By 1921–22, after a number of years of deep economic depression, the country had entered the phase of revival, with an increasing industrial and agricultural output, with a growing vol-

8. The Business Conjuncture, chap. 5, pp. 215–229.

ume of goods in circulation, with an increasing volume of money and an expanding body of credit. This was *reconstructive* prosperity, developing thro the agency of unused capital and equipment that was left as a heritage from pre-war times and that had been conserved thro the long period of economic stagnation. In the development of this prosperity we thus observe characteristic peculiarities, usually found only in such reconstructive movements.

1. Revival appears first in the industries that serve primary food needs, next in the textiles, and finally in the heavy metallurgical lines.

2. Industries producing means of production revive later than those serving the immediate needs of the population, but the expansion of the former is more vigorous as the revival proceeds.

3. The most intensive growth is to be observed in those productive branches which, during the preceding slump, had fallen to the lowest levels.

4. The tempo of revival and reconstruction declines as the economy approaches former levels.

These general observations were first formulated by V. A. Basarov and V. G. Groman.

Besides these tendencies there is also to be observed the basic feature of social reconstruction, that is, the crowding out of private business by state and generally socialized (coöperative) economic forms. This was effected thro the so-called "planned" measures, in particular thro the credit, tax and railroad rates policy.

The reconstruction movement of 1921–26 was not uninterrupted. From time to time it was complicated by the characteristic disturbances of the economic equilibrium (disproportions). The fluctuations observable in the Soviet economy are of two kinds: the seasonal

movement, recurring in definite months of the year,[9] and the short changes in economic weather, which are of a purely conjunctural order.

Of these latter we may notice (1) the depression in the fall of 1923 (trough in November), which was far below the usual seasonal; (2) an intensively cumulating expansion of trade between December, 1923, and February, 1924; (3) the depression due to deflation between March and May, 1924 (a result of the monetary reform carried thro at that time); (4) a mild revival with slight retardations due to seasonal changes thro the period from July, 1924, to May, 1925; (5) a vigorous expansion (of an inflationary order), marked by an increasing scarcity of goods and rising prices, during the period from July, 1925, to April, 1926, with a peak in April, 1926;[1] (6) a break in May, 1926, and a stabilization of demand at the level of the first months of 1926 (a level which was below the peak of April).

The causes of all these conjunctural changes are complex and diverse, as is to be expected during a transition period. The period of observation is as yet too short, and the changes are too numerous for one to attempt the development of a theory of these brief and peculiar cycles. But the most important factor in these changes is that of money and credit. During this period the volume of money and credit issued was distributed between the city and the country by means of a definite price policy for agricultural and industrial commodities. We find here, as in earlier years, that a disparity between the levels of prices of agricultural and industrial

9. Decline in the second and third quarters of the business year, with the trough in January and May and peaks in October and March.

1. This period is discussed in detail in my two recent articles: "Inflation in the Economic Life of U. S. S. R.," Economic Survey (Ekonomitcheskoie Obosrenie), 1926, vol. ii; "The Main Economic Events of the First Quarter of 1926–27 in Connection with the Leading Events of the Year 1925–26," Ibid., 1927, vol. ii.

goods calls forth a depression, while their convergence stimulates expansion.[2] And, as in the pre-war period, the crops exercise a considerable influence. This influence is especially clear in a regional study of conjunctural changes, altho it is not so apparent for the country as a whole.

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2. S. A. Pervushin, Ibid. Thus the expansion of 1925–26 was originated by the uneven distribution of an expanded volume of money and credit, in particular by an increase in the share of laborers and of peasants in the national income (resulting from a high level of grain and bread prices).

BORROWED RESERVES AND BANK EXPANSION

SUMMARY

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I

Of vital significance in the appraisal of the power of the rediscount rate to influence and control expansion is the ability of a bank to multiply its loans on the basis of a given advance from the central bank. On this point there has been a sharp clash of opinion, one group maintaining that, while a given increase of central bank credit may result ultimately in a tenfold expansion for the system, no such expansion is possible to the immediate beneficiary of such accommodation; while another group, containing men experienced in the practical administration of banks as well as in the academic exposition of their functions, maintains that a bank can expand a given advance from the reserve bank four or five times in the form of credit to its own clients.

In their work, *Banking Practice*, L. H. Langston of the National City Bank of New York and N. R. Whitney, Professor of Finance of the University of Cincinnati, say:

The possibility of manufacturing credit, or — of giving to a considerable number of persons the right to use the same funds, is the chief source of profit for the bank. The limits of the bank's power to manufacture credit are fixed by its possibilities with respect to a cash reserve.[1]

In a balance-sheet illustration they show an expansion of a bank's credit to five times the amount of established reserves.[2]

Mr. W. H. Kniffin, vice-president of the Bank of Rockville Centre, Long Island, in his book on *American Banking Practice*, states that there are two basic principles underlying banking operations:

(*a*) That a dollar in money will support from four to ten dollars in credit; and (*b*) that a great part of bank deposits arises out of the proceeds of loans.[3]

For every dollar in money in hand it may expand its debts about ten times.[4]

Suppose it has been found that a reserve of 10 per cent is sufficient to carry the operations of the bank day by day. Therefore for every dollar the bank receives in cash, it may *create deposits from loans*, and while it may pay interest on one dollar, it draws interest on ten. *Banks expand and contract their loans according to the amount of reserve held;* and their deposits and loans therefore move up and down together.[5]

The Commission of Agricultural Inquiry in its report on credit referring to the above possibility states:

In fact, a loan by a Federal reserve bank to a country member bank in the form of a deposit credit forms the reserve basis for additional deposit loans by that member bank to its customers, in amounts averaging about fourteen times the amount which it borrowed from the Federal reserve bank. Allowing for the fact, however, that about one-sixth of the customers' borrowing will ordinarily be required in notes, which the member bank will have to withdraw

1. L. H. Langston and N. R. Whitney, Banking Practice (Ronald Press, N. Y.), p. 252.
2. Ibid., p. 46.
3. W. H. Kniffin, American Banking Practice (McGraw-Hill Book Co., N. Y., 1921), p. 9.
4. Ibid.
5. Ibid., p. 10. The italics are Kniffin's.

from the reserve bank, the expansive quality of a reserve deposit created by a loan or discount, in the case of a country member bank, would be about four and one-half, instead of about fourteen, times the amount of the reserve deposit.[6]

A similar view is expressed by Agger,[7] and Professor Phillips refers to this as the traditional view previously expressed by White[8] and Macleod.[9] There is, therefore, some sanction in authority for the supposition that a bank may expand its own loans by several times the amount of the advance which it receives from its reserve bank.

Edwards and Willis,[1] on the other hand, state that

> perception of this fact has led some hasty thinkers to suggest that under a central banking system an advance in the rate of rediscount would not affect the commercial rate at all, or only in a negligible way, since it would have to be raised several per cent to produce any noticeable change in interest rates among actual loans to customers.

Professor Westerfield develops a theory of the diffusion of cash among the banks in the system, somewhat similar to that of Professor Phillips, altho he is more liberal in acknowledging exceptions.[2] He offers no exhaustive analysis of the problem, but does point to the likelihood of an increasingly unfavorable clearing-house balance should a single bank in a system attempt to expand more than other members in the same system.

The most ambitious attempt so far made to disestablish the traditional theory of bank expansion is that of

6. Report of the Joint Commission of Agricultural Inquiry, Credit, Report No. 408, 67th Congress, 1st Session, ii, 18.

7. E. E. Agger, Organized Banking (Henry Holt and Co., N. Y., 1918), pp. 31–33.

8. Horace White, Money and Banking, 5th ed. (Ginn & Co., Boston, 1914), pp. 194–196.

9. Henry Dunning Macleod, Theory and Practice of Banking, 5th ed., i, 324.

1. H. Parker Willis and George W. Edwards, Banking and Business (Harper & Bros., N. Y. & London, 1922), p. 195.

2. Ray B. Westerfield, Banking Principles and Practice, 5 vols. (Ronald Press, N. Y., 1921), iii, 77.

Professor C. A. Phillips.[3] He contends that it is not true that a loan of $1000 from a Federal Reserve bank by a member bank will enable the member bank to expand its own loans by an amount ten times as great. Such a bank would immediately be confronted by an unfavorable clearing balance which would eliminate such a possibility. While it is true that the borrower in drawing on his account sometimes pays other depositors of the same bank, and that some of the amount borrowed remains on deposit, nevertheless,

> for every dollar that a typical American bank lends, it loses not less than eighty cents through direct cash withdrawals by borrowers and through unfavorable clearing balances. In other words, the typical banker is able to lend approximately $1.25 for each $1.00 borrowed. It follows that rediscount rates roughly equal to the market rates (if the expense of carrying on the banking business is considered) will ordinarily be sufficiently high to serve as a check on borrowing member banks.[4]

While a borrowed reserve may support manifold loans in the banking system, it does not support manifold loans for the individual bank, because each bank loses 80 per cent of its loans to other banks, and these banks, finding themselves in possession of a new reserve, are able to extend new loans to the amount of approximately $1.10 for every dollar of deposited reserve. He makes a distinction between deposited reserves and borrowed reserves, the latter permitting a higher ratio of loans than the former, since a cash deposit gives rise to a liability against which a reserve must be kept, whereas the bank is not required to maintain a reserve against the liability which is the result of a loan from the Federal Reserve bank.

3. Chester A. Phillips, Bank Credit (The Macmillan Co., N. Y., 1921), pp. 32–74; "Theoretical Considerations Bearing on the Control of Bank Credit Under the Operation of the Federal Reserve System," Annals of the American Academy of Political and Social Science (Jan., 1922), pp. 195–199.

4. Ibid., p. 196.

Even in a period of general loan expansion it is impossible, according to Professor Phillips, for any one bank to make manifold loans on the basis of a given amount of borrowing. The author distinguishes between lending power based upon borrowed funds and lending power based upon the checks of depositors which are the result of the lending operations of other banks. The amount that a member bank borrows does not affect the amount that other banks lend, or the amount that the borrowing bank itself will receive as the result of the lending operations of other banks.[5]

If within a credit area where all member banks are borrowing and expanding their loans, one institution suddenly ceases to borrow, the stream of increasing deposits flowing from the expanding banks will tend to continue to swell the deposits and, therefore, the lending power of that bank that has ceased to borrow. A resumption of borrowing by the exceptional bank will enhance the lending power of that bank by an amount only slightly in excess of the amount borrowed.[6]

Phillips holds that when the distinction between the two sources of lending power is made, the "persistent contention" of manifold loans "loses its semblance of validity."[7] The logical corollary of this proposition is that the rediscount rate is a potent weapon of credit control, and such a use of it the author urges and defends.

In passing, it may be remarked that Professor Phillips omits one factor which would have helped his case considerably — the withdrawal of cash from a bank for current use in the community as the result of an increase in loans. Since this constitutes about one sixth of the amount,[8] both checks and cash, withdrawn from a bank, its omission has impaired the effectiveness of his demonstration.[9]

5. Bank Credit, p. 197. 6. Ibid., pp. 197, 198. 7. Ibid., p. 198.
8. Report of Joint Commission of Agricultural Inquiry, loc. cit.
9. Bank Credit, p. 55.

II

If we grant the premises of Professor Phillips, his conclusions are valid. But the evidence that he offers in support of his premises is not convincing.

Before proceeding to an examination of these premises the writer wishes to acknowledge the substantial contribution to the theory of credit expansion which Professor Phillips has made. The current explanation of credit expansion is unduly naïve and not entirely accurate. Professor Phillips has performed a valuable service in showing its inadequacy. While the premises and reasoning with which Phillips criticizes the traditional theory must be challenged, the fundamental value of the work which he has done cannot be questioned.

The orthodox explanation of credit expansion would lead the uninitiated to expect that the limiting factor in expansion is the volume of reserves, and that the average bank, on securing an increase in reserves of any stated amount, can immediately and in some automatic fashion increase its loans and deposits by a multiple of that amount determined by the legal ratio of deposits to reserves. Phillips shows that such a simple procedure is not open to the average bank. The attempt to expand loans in this fashion would lead to an unfavorable clearing balance, and such a balance could not be offset by incoming checks on other banks, since there is no direct relation between the stream of checks drawn on other banks and the expansion of the bank in question. As a result, a reserve newly acquired through loans from a central bank would be quickly exhausted and additional resort to the central bank would be required to provide necessary reserves and clearing-house balances. Professor Phillips contends that the expansive possibilities of a loan from the central bank are not much

greater than the loan itself; and he rests this contention upon three premises, which it is the purpose of this paper to examine.

The first of these is that there are two kinds of demand deposits, one arising from a direct lodgment of cash or checks drawn on other banks, and the other arising from loans which the bank makes, being, in fact, the proceeds of those loans. The first type of deposit is relatively stable. The second type, that which is the result of a loan by the bank which holds it, is quickly exhausted or reduced to a minimum, and remains at a low point during the life of the loan, being replenished shortly before the loan comes due.[1] Phillips devotes much more attention to a demonstration of the instability of the latter than to the stability of the former.

His second premise is that the average of deposits which result from loans does not exceed 20 per cent of the loans.[2] While total loans and deposits of a bank or a system of banks usually move together, it by no means follows that the proceeds of bank loans are left entirely on deposit in the identical banks which made the loans. This can happen only if clients do not use the credit which they secure from their banks, or are always careful to pay their checks only to other depositors of their own banks. Neither conclusion is reasonable. We may agree with Phillips that a large part of the proceeds of a given loan is withdrawn. How much this is, we do not know. Such evidence as is available will be considered at a later point in this paper.

The third and perhaps weakest premise of Phillips is that 99 per cent of all checks drawn on a bank by borrowers pass through some clearing operation; the other one per cent, presented by other depositors of the same bank, is negligible.[3]

1. Bank Credit, pp. 40, 43. 2. Ibid., p. 42. 3. Ibid., p. 38.

We shall now proceed to a consideration of each of these postulates and having imposed certain modifications we shall develop a theory of credit expansion suggested by the procedure of Professor Phillips.

III

(1) Let us consider the first premise, in which he develops a distinction between primary and derivative deposits. A derivative deposit is one which arises "directly from a loan or which is accumulated by a borrower in anticipation of the repayment of a loan." [4] "A primary deposit may be defined as one that rises from the actual lodgment in a bank of cash or its readily convertible equivalent, such as checks drawn on other banks, but not made in anticipation of the repayment of a loan." [5]

A primary deposit, consisting of funds deposited with the bank for safekeeping and to be currently drawn upon as well as replenished, is relatively stable. In contrast to this we have the conventional course of the derivative deposit. The proceeds of the loan are credited to the account of the successful applicant. He promptly draws against it for the purpose which caused the loan. This results in a rapid, if not immediate, exhaustion of the account, modified only by the limitations as to minimum balances upon which the loan was conditional. Throughout the life of the loan the borrower's account remains at a low point. More or less gradually before the loan is due, a balance is accumulated for the purpose. On the due date this balance is wiped out in the payment of the loan. A primary deposit, according to Phillips's contention, does not behave in this fashion; on the contrary, it is almost stable.

4. Bank Credit, p. 40. 5. Ibid.

This distinction, based upon the instability of the derivative deposit, can scarcely be sustained. Granting that many accounts which result from loans do conform to the description above, is it true that primary deposits do not exhibit similar peculiarities? Much depends upon the nature of the income which results in primary deposits — whether it is the result of profits, salaries, fixed incomes such as rents, interest payments, and dividends, commissions. Much depends also upon the spending habits of the recipients. Take the income of the business man. Where the flow of profits comes in an even stream, and the individual lives within his means and buys the necessaries of life for himself and family only after he has acquired the requisite balance, his account may be fairly stable, particularly if he is a cautious individual and always keeps a reserve on hand for an emergency. On the other hand, he may not be a person of this kind; and his business may be seasonal, yielding a year's income within a fairly short period, while it is spent evenly throughout the year. In such case it will display the characteristics attributed to the primary deposit by Phillips, or it may be used to pay accounts which have accumulated during the year, manifesting precisely the same instability which was supposed to be the distinguishing and peculiar trait of the derivative deposit.

Or we may take the case of the average farmer of the South, the West, or the East. He raises a cash crop which he markets once a year, the proceeds of which will enable him to "clean up." For this day he lives — and so do his creditors. Unfortunately, in too many cases the anticipated market yield has been spent long before it is realized. When the crop is finally sold and the farmer has his check in hand, he looks at it for one fleeting moment, drives to the bank, establishes a formid-

able if ephemeral "primary deposit," which in the course of the next few days or weeks melts away in the payment of accumulated bills. What difference is there between this sort of deposit and a derivative deposit which is developed in anticipation of the maturity of a bank loan? There is none except in the character of the obligation to be discharged. In both cases we have a rapid exhaustion of the account. So far as the ability of the bank to make other loans is concerned, there is no difference. The assumption which would contradict this conclusion is one in which the farmer acquires a substantial balance, the result of the sale of his crop, and then spends it gradually throughout the year. This assumes a credit position and a degree of prosperity for the average farmer which are rarely in accord with the facts.

What is true of the farmer is true of many others. It is the exception rather than the rule that income flows in an even stream. Almost every line of business has its seasonal fluctuations, and therefore its periods of maximum income with great activity and of low income with relative inactivity. Wherever the individual allows his debts to pile up for the day when "his ship comes in," his primary deposits are going to act in exactly the same fashion as if he had borrowed from the bank. The only difference is that in the one case, the bank is the creditor, in the other a group of individuals or commercial houses.

The case of the salaried man or the man who is the recipient of a steady income from investments may seem to offer deposit accounts which conform to the stability which Phillips has postulated for the primary deposit. By no means is this necessarily the case. The salaried man has his monthly rent to pay, the installment on his car, his radio, his refrigerator. His mail about the first

of the month is characteristic. If he is conservative, he will retain a balance for current needs which must be met during the month, and for emergencies. It is only this small balance which conforms to the definition of the primary deposit. What is true of the salaried man is true of the man whose income consists of other forms of periodic contractual payments. There is no intrinsic difference between the deposits which result from such income as the foregoing and the deposits which are the proceeds of bank loans. In the latter case the bank provides the credit which makes deferred payment possible. In the former the tradesman provides it. The liquidation of both types of obligation causes abrupt impoverishment of bank balances.

It might be argued that many individuals do not spend their entire incomes and have a surplus which they permit to accumulate, and that such accounts exhibit the qualities which Phillips has attributed to the primary deposit. The argument is not valid. Such individuals also have their bills to pay. As these bills are paid periodically, the accounts fluctuate accordingly. If there is a certain amount left after normal current obligations have been provided for, over and above what they are expected to keep to compensate the bank for carrying their account, such a balance will not remain unused for any length of time. With many attractive opportunities for investment, a continuing unused balance will be withdrawn and invested. In such cases an account shows gradual accretions, and then a sudden depletion for investment purposes.

On the other hand, one may question the accuracy of the description of the average derivative deposit which Professor Phillips gives. The graph of this account is a trough with rather steep sides and a flat bottom.[6] One

6. Bank Credit, p. 43.

side represents the account immediately after the loan is granted. The steepness of the side indicates the rapidity with which the account is reduced. The broad flat bottom shows the account during the greater part of the life of the loan and, according to Professor Phillips, is never more than 20 per cent, and usually much less.[7] The far side of the trough is likewise steep and shows the accumulation in anticipation of repayment.

Primary Deposits[8]

The picture is unduly conventional. It does violence to the very nature of the commercial loan. The underlying philosophy of commercial banking is that the credit of the institution should be used to facilitate the processes of production and distribution. It should assist the flow of goods from the producer to the consumer. The mill operator borrows to purchase raw materials. As these are developed into more finished products, they are passed on. Payments are made, and, presumably, deposited in the bank by the borrower. When the goods have all passed out into the channels of distribution, the proceeds are intended to enable the borrower to pay off his debt to the bank and have a margin left for his own costs and profit. The conventionalized illustration assumes that the finished products pass on at the same time, or within a short space of time, and are all paid for at or near the end of the period.

7. Bank Credit, p. 45. 8. Ibid., p. 43.

While some transactions undoubtedly manifest such characteristics, no one has yet discovered what proportion of the total they constitute. Phillips appears to think that most transactions are of this nature. It may be that to a large extent brokers, jobbers, importers and exporters borrow to purchase specific lots which, when sold, allow them to pay for the accommodation which the bank extended. The financing of retail distribution and of manufacturing would be just the opposite. The retailer borrows to lay in a certain stock. As it is sold, he accumulates a balance at the bank which he uses to pay his debt to the bank. There is no reason why he should defer his deposits, or persuade his customers to wait with their purchases until the end of the month, because that is the time his note comes due. The textile manufacturer and the miller both find it to their advantage to lay in large supplies at harvest time. The raw materials are turned into finished or partly finished products. As they are sold, the proceeds are deposited in the bank; and when the note comes due, it is paid in whole or in part, according to the nature of the business and the extent to which the raw materials, to purchase which the loan was first made, have passed on and been paid for. The rate and time at which these ultimate payments are made have no discernible relation to the proximity of the maturity date of the manufacturer's note. In fact, the underlying theory of the eligibility requirements of rediscountable paper in the Federal Reserve system is that sound commercial credit is extended only for transactions which are self-liquidating. Does Professor Phillips maintain that this automatic liquidation can be predicted, that the borrower adjusts the time of his loan accordingly and that it occurs at the end of this definite period? Yet that is precisely what his chart and account would lead one to suppose. In the absence of direct proof it would seem more in accord

with the normally observable phenomena of business to believe that the substance of liquidation accumulates, on the whole, rather evenly throughout the period during which the bank credit has been extended. To the extent that this is true, the distinction between primary and derivative deposits is further invalidated.

To sum up: primary deposits are no more likely to be stable than derivative deposits; accumulations and depletions of both kinds of accounts have much more in common than Phillips has allowed; and on the whole the distinction is untenable.

IV

The second premise of Professor Phillips is that the ratio of derivative deposits to loans is 20 per cent. The validity of this premise depends, in part at least, on the proportion between demand deposits and time deposits, and between commercial loans and capital loans.

Every bank which has both demand and time deposits plays a dual rôle in the expansion and distribution of credit. As a holder of demand deposits, it has sold its clients the right to demand immediate payment in return for the right to demand immediate payment from other banks, from itself, or for cash. To a large extent the rights to demand immediate payment held by its clients and effective against itself have their origin in the acceptance by the bank of the right to claim payment from its depositors at some definite time in the future; in other words, they are the proceeds of loans and discounts. To the extent that a bank provides credit to its clients realizable by the latter upon demand, it is a fabricator of credit. It is bank credit in a very literal sense which the customer receives. The capacity of a bank to expand as the result of its own credit-creating energy is another matter, which will be examined later.

It remains to weigh the other rôle of the bank, the rôle in which it accepts deposits from its customers which they do not intend to withdraw on short notice, but on the contrary expect to leave there for a substantial period, stipulated as part of the agreement with the bank. Against such a deposit the latter is required to keep a reserve of only 3 per cent. The bank agrees to pay the depositor a rate of interest on this undisturbed balance, usually a little less than the market rate on first-class securities. The bank takes these deposits and reinvests them for longer periods. The proceeds are very likely to be used for capital purposes and be converted into "brick and mortar." As regards loans for capital purposes in comparison with those for commercial purposes, we have fairly definite knowledge for the liability side of the bank statement, in the figures for time and demand deposits respectively. But for the other side, we must rely on estimates. Moulton makes the following estimate, which may be regarded as a sufficient approximation.

> We may safely conclude that around 50 per cent of all loans of national and state banks and trust companies is devoted to investment uses, and that, including direct investments, in the neighborhood of two-thirds of all credit extended by commercial banks goes for fixed rather than for working capital.[9]

The classification of deposits we may take from the reports of the Comptroller.

	Time	*Total*
	(in thousands)	
1922	15,613,828	37,194,318
1923	18,018,276	40,034,195
1924	19,090,169	42,954,121
1925	20,833,394	46,765,942
1926	24,211,000	48,882,296

This yields a ratio of 45.3 per cent of time to total deposits; probably an understatement, since a portion of

9. H. G. Moulton, Journal of Political Economy, xxvi, 717, 718.

the deposits reported to the Comptroller each year are unclassified, and the difference between total deposits and time deposits does not consist entirely of demand deposits. It is fair to assume that approximately one half of all deposits in the United States are time and the other half demand.

At this point a question may be raised. Is the difference between the return paid on investments and the interest paid to the depositor the sum total of the profit which the banker derives from the exercise of his investment function? It is if the total invested is withdrawn from the bank and none of it redeposited in the same bank. This is probably true in a great many cases, but by no means in all. Where the banker purchases securities in another money center, the chances are that he will suffer a net clearing loss equal to the investment. But not all investments are of this character. John Smith comes in and borrows $5000 on mortgage, to enable him to build a home. Smith draws his checks to pay the various contractors, some of whom in all likelihood have accounts with the bank; the funds seep through the community. Or the bank invests in a local shoe factory, the bank still using the funds deposited on time. The factory uses these to build an addition to the plant, to have a new siding constructed, to install new machinery, or for any one of a number of other purposes. To the extent that the materials are bought at points outside, the checks offered in payment will find their way into other centers and will have to be cleared. But some of the funds will remain in the community and will serve to swell the deposits of others, compensating in part for the depletion of Smith's account.

Furthermore, such an investment as that in a factory will be made only if justified by increased productive-

ness of the plant. Increasing the flow of goods from the community should result in an increasing flow of funds from other centers in settlement of this favorable balance of trade. Eventually the capital consumed in the production of the shoes comes back to the point of origin, and as it returns, swells the total of deposits.

The distinction between the uses of time and demand deposits may be better visualized if we take two banks, one of which is a savings bank and accepts no demand deposits, and the other a commercial bank accepting no time deposits. The liabilities of the first bank permit it to use the funds entrusted to it in the purchase of bonds or real estate mortgages. Those who sell the bonds and mortgages are not expected to maintain a portion of the proceeds on deposit and certainly do not do so. Our derivative deposit ratio for such an institution would be zero.

The demand liabilities of the commercial bank compel it to maintain assets of a highly liquid character to conform to its liabilities. It invests, therefore, to as large an extent as possible in short-time self-liquidating paper. It provides the community with working capital which is constantly flowing in and out. The derivative deposit ratio of the commercial bank will be very substantial as compared with that of the savings bank.

Now the great majority of the banks in the country carry on a combination of these two operations. They play a dual rôle, and are savings banks while at the same time discharging the functions of commercial banks. We are interested here in the ability of the commercial bank to expand; and since the amount of deposits left in a loan account is an important factor in the ability of the bank to multiply its loans, it follows that an average, computed on the basis both of investment proceeds left

on deposit and of commercial loan proceeds left on deposit, seriously understates our derivative deposit ratio factor.

While Professor Phillips made inquiry in a number of widely scattered centers in order to determine the ratio of derivative deposits to loans, he made no distinction between the two types.

> When a large proportion of a bank's advances takes the form of paper bought from paper dealers, — notes of distant borrowers, — the ratio of derivative deposits to combined advances made to depositors and non-depositors may be decidedly low. Essentially the same result is obtained when advances are made on mortgage security. The Indiana bank included in the table above reports that about 65 per cent of its loans is made on commercial paper and mortgages; and that on such loans practically no deposits are left with the bank. The remaining 35 per cent of loans are made to local commercial borrowers, who are also depositors, and about 25 per cent of the amount loaned to these depositors remains, on an average, with the bank for the duration of the loans.[1]

It is with the latter derivative deposits that Professor Phillips should have been concerned since they are the proper reflection of the commercial operations of the bank. Instead of doing so, he lumped the two together; and on this basis it is that his table shows for the particular Indiana bank a derivative deposit ratio of 8.75 per cent.[2]

As a result of these methods, he secures for the entire country an average, unweighted, of derivative deposits of 11.3 per cent. The lack of weighting is important, since on his own estimates New York shows a derivative deposit ratio of 20 per cent, which is practically offset by the derivative deposit ratio of Oskaloosa, Iowa, with a ratio of only 2 per cent.[3] However, in the absence of

1. Phillips, Bank Credit, p. 48.
2. Ibid., p. 45.
3. Ibid., pp. 45, 46.

definite statistical material on this subject and in order to be conservative, let us accept the estimate of Professor Phillips and consider our average derivative deposit as 20 per cent of the original loan; in other words, accept the second premise of the proposition which we are questioning, and use it as the best available hypothesis for a theory of credit expansion.

V

Turn now to the third premise, which is that, of all the checks drawn on a bank, so large a portion passes through a clearing operation that the part which is passed over the counters of the same bank by other depositors of that bank is negligible. Here I take sharp issue. Professor Phillips has considered the case of a large bank in a great city and stated that of $10,000,000 of checks drawn on that bank, only $100,000 come back to the same bank *via* its own depositors, while 99 per cent come back only after they have been through some clearing operation. Can a general rule covering 30,000 institutions be derived from the experience of a single institution, unless the experience of that institution is shown to be typical? Not to develop a counter generalization, but simply to illustrate the possibility of error, the writer made inquiry at a bank which was one of two banks in a college town of 10,000 inhabitants, and at another bank which was located in the suburb of a large eastern city. The cashier of the first institution estimated that from 60 to 80 per cent of all the checks drawn on the bank came back without passing through a clearing operation. The cashier of the second bank estimated that from 20 to 30 per cent of the checks drawn on the bank were redeposited by other clients of his bank. If one were to deduce from these two observations that on an average, in all the 30,000 banks in the

country, 52.50 per cent of checks drawn are cleared and the other 47.50 per cent pass back to the banks without clearing, the integrity of the logic might properly be indicted.

A careful study of the excellent statistical material contained in the annual reports of the comptroller and the publications of the Federal Reserve Board convinced the writer that it would be possible to develop an approximately correct estimate of the percentage of checks drawn against private accounts which passes through some clearing operation. This estimate is based upon the following known facts:

1. The individual time and demand deposits of all reporting banks contained in the reports of the comptroller.
2. The individual time and demand deposits in approximately 700 reporting member banks in leading cities contained in the annual reports of the Federal Reserve Board.
3. The bank debits to individual accounts in 141 principal cities contained in the annual reports of the Federal Reserve Board.
4. The total clearings for all reporting clearing houses contained in the annual reports of the comptroller.
5. The clearing operations of the Federal Reserve system contained in the annual reports of the Federal Reserve Board.
6. The fact that (2) and (3) are exactly comparable, altho the banks which report are not identical.[4]

A tentative and crude total of debits to individual accounts in the country is then derived by assuming that individual deposits in 700 reporting member banks are to bank debits to individual accounts in 141 reporting centers as deposits in all banks in the United States are to total debits. This first trial estimate is corrected for the following factors: (*a*) time deposits; (*b*) lower rate of deposit turnover in country banks; (*c*) unclassified deposits; (*d*) unreported deposits.

A similarly tentative and crude total for clearings was

4. Carl Snyder, Business Cycles and Business Measurements (The Macmillan Co., N. Y., 1927), p. 150.

then obtained by adding the total clearings of all reporting clearing houses to the total clearing operations of the Federal Reserve system. This trial total was in turn corrected for the following factors: (*a*) bankers' checks; (*b*) duplications; (*c*) clearings not reported, including clearing-house associations which do not report, and informal clearings in towns with two or three banks. The corrected total clearings divided by the corrected total debits to individual accounts give the estimated percentage of checks drawn on individual accounts which passed through a clearing operation.

Working this out for a period of five years, 1922–26, the writer obtained the following results:

1922 — 62.0 per cent of all checks drawn were cleared.
1923 — 64.7 " " " " " " " "
1924 — 65.0 " " " " " " " "
1925 — 65.1 " " " " " " " "
1926 — 66.7 " " " " " " " "

The average for the five-year period is 64.7 per cent.

The writer developed two other less direct and less reliable methods for computing the same ratio. The second method is somewhat related to the first and is, therefore, not an independent check. It involved the use of the estimate of average velocity of bank deposits made by Dr. Burgess.[5] Multiplying the deposits in all banks by this rate of turnover, an estimated total of debits was secured; making corrections for clearings similar to those used in the preceding method, these results were obtained:

1922 — 59.5 per cent of all checks drawn were cleared.
1923 — 64.5 " " " " " " " "
1924 — 63.5 " " " " " " " "
1925 — 62.5 " " " " " " " "
1926 — 66.7 " " " " " " " "

This gives us an average for the same five-year period of 63.5 per cent.

5. W. R. Burgess, "Velocity of Bank Deposits," Journal of the American Statistical Association, June, 1923, pp. 727–740.

Still a third method, entirely independent of the previous two, was suggested by the work of Professor Fisher in estimating the velocity of bank deposits. Fisher, when computing the total of check transactions for the country, used the fact that during 1909 the ratio of check transactions to clearings outside of New York City was 4.4 to 1, while for New York City for the same year it was .9 to 1.[6] He obtained his total by multiplying outside clearings by five and adding them to New York clearings. This rough total he corrected by multiplying by a factor representing the ratio of actual check transactions to his computed barometer, a factor based upon the actual ratio of the two in 1896 and 1909. Using his method and comparing total uncorrected clearings with total uncorrected debits, and making allowance only for the fact that in the period 1922–26 the reports of clearings seemed to be about 50 per cent more complete than in the period covered by Fisher, the writer obtained the following results:

1922 — 62.7 per cent of all checks drawn were cleared.
1923 — 60.5 " " " " " " " "
1924 — 61.1 " " " " " " " "
1925 — 66.5 " " " " " " " "
1926 — 62.7 " " " " " " " "

The average for the five-year period obtained by this method is 62.7 per cent.

Taking the average of all three methods, we get 63.6 per cent as the proportion of checks drawn which pass through a clearing operation. Allowing for the limitations of the statistical material and the fact that guesses had to be made on unimportant details (which fortunately tended toward mutually compensatory errors) I believe that this is an acceptable approximation.

No one bank, of course, would be justified in depend-

6. Irving Fisher, The Purchasing Power of Money (The Macmillan Co., N. Y., 1925), p. 447.

ing upon such a ratio of cleared checks. This is simply an average for thousands of banks. In a self-sufficing community the ratio will be low. In a metropolitan community served by many banks it will be high. As market areas widen and individuals reach farther and farther beyond the confines of their own communities in order to satisfy their needs, the area of dispersion of checks will increase and a smaller proportion of the total will be returned by other depositors of the identical banks on which they are drawn. On the other hand, as the movement of bank consolidations proceeds, we may look for an increasing economy in the use of reserves for clearing purposes.[7]

It follows that the third premise of Professor Phillips, that 99 per cent of all checks drawn pass through a clearing operation, is invalid. It appears from the preceding analysis, (1) that the distinction between primary and derivative deposits based upon the stability of the former and the instability of the latter is not well founded; (2) that 20 per cent as the ratio of derivative deposits to loans is probably more nearly the average of the minimum of such deposits than the average of the actual ratio of derivative deposits to loans; (3) that 63.6 per cent of all checks drawn pass through a clearing operation, not 99 per cent.

VI

How do these modifications of the premises bear on the ability of a bank to expand? The attention that this subject merits is dependent largely upon the light which it casts on the ability of a central bank to control credit by regulation of the discount rate. If a bank can extend multiple loans on the basis of a given advance from the central bank, then the rate that the latter charges

7. I hope to present on another occasion a more detailed account of the methods used in these computations.

within ordinary limits is a man of straw so far as the attempt to control credit is concerned. If, under the conditions which we have developed, a bank lends an applicant $100, $20 are kept in the account and $80 are withdrawn. Of this $80, $29.12 finds its way back to the bank *via* other depositors, while $50.88 must be met at the clearing house. As a result of this operation the bank has increased its own deposits by $20 plus $29.12, a total of $49.12. If it is a member bank in a reserve city, it must keep a reserve of $4.912 against these deposits. Furthermore (in the absence of compensating expansion by other banks) it must take care of an adverse clearing balance of $50.88. Therefore, if it borrows $55.792 from its Federal Reserve bank, it can extend accommodation of $100 to one of its customers. On this basis the coefficient of expansion is 1.79219. No doubt this is an imaginary bank, of which we probably have no exact examples; we are dealing with statistical averages. It need not be assumed that most banks have the precise experience here traced.

But there is more to be said. The above example is based upon two assumptions. The first is that this is the only bank which is expanding its credit; the second, that the expenditure of the credit does not stimulate a counter inflow of checks drawn on outside banks, which will tend to cancel the adverse clearing balance. While the second is a possible hypothesis, it is an improbable one. But the first is not, and deserves attention.

Let us take a self-sufficient community whose banking facilities are provided by three banks of equal and similarly constituted resources and liabilities. Let us take 1000 as the index of loans and deposits in each institution, with loans equalling deposits. We start then with the following abbreviated statements of the three banks:

Banks	*Loans*	*Deposits*
A	$1000.00	$1000.00
B	1000.00	1000.00
C	1000.00	1000.00

Applications for additional loans amounting to $100 are made at C, and granted, and the statement of this institution then reads as follows:

Loans	*Deposits*
$1,100	$1,100

The successful applicants draw on the bank in accordance with the rules developed above, and the accounts are reduced within a short space of time to 20 per cent of the amount of the loans. The other 80 per cent, on being drawn, flows to the three banks in the following proportions: 50.88 units to A and B together, or 25.44 to each and 29.12 to C. Deposits in A and B are now $1025.44 and loans are $1000. C has been compelled to increase its reserves through rediscount at the Federal Reserve bank by $55.792; while the expansion of C has increased the reserves of A and B by $25.44. Multiplying this by our coefficient of initial expansion, 1.79219, A and B can each expand its loans by $45.593 without borrowing from the central bank. Of the loans granted by A, 20 per cent, or $9.1186, remains on deposit. Of the amount spent, $13.28 is redeposited by other depositors of the same bank and $23.198 passes through the clearing house. Of the part which passes through the clearing house, one half gets there through Bank C and the other half through Bank B. In other words, as a first result of the expansion of $100 by C, the checks on other banks which its own clients have presented have increased by $11.599. This has been due to the expansion stimulated in A, as the result of the antecedent expansion of C. The same process takes place with B; and as the result of the expansion induced in B by the

previous increase of credit in C, there flows back to C another $11.599 of checks on B. Thus the extension of $100 of credit by C to its own clients has stimulated a counter flow of checks on other banks amounting to $23.198 with which C can meet its own clearing deficit.[8] Or looking at it in another light, C has experienced an increase in its reserves of $23.198, which increase has been the result of its own previous advances to its own customers. Again applying our coefficient of initial expansion, C can extend loans amounting to $23.198 × 1.79219, or $41.595. It must be remembered that this secondary expansion has not been effected by an additional recourse to the central bank, but is purely the result of the initial accommodation secured. The amount so far extended by C as the result of this $55.792 loan from the central bank then is $100 plus $41.595 or $141.595. Dividing $55.792 into $41.595, we get a coefficient of secondary expansion of .74554. The proceeds of this secondary expansion will flow out into the credit mart of the community in the same manner as the first, and 23.198 per cent of this secondary credit growth will eventually return to the bank of origin to be used for a tertiary expansion which would amount to 41.595 × .23198 × 1.79219, or 17.29. This would again induce a counter flow on the basis of which a fourth expansion would take place, amounting to 17.29 × .23198 × 1.79219, or 7.188. A fifth expansion would be 7.188 × .23198 × 1.79219, or 2.99. Successive expansion during the sixth and seventh cycles will amount to respectively 1.24 and .51.

Mathematically we are dealing with an infinite series

8. If it uses this to reduce its loan from the central bank, its debt will be $32.594, and if we can consider that this has made possible the loan of $100 to its clients, the coefficient of expansion is 100 divided by 32.594 or 3.068 *plus*. This is the same as the coefficient of mediate compound expansion developed below.

in a geometric progression with a ratio less than unity. The formula for this is $s = \frac{rl - a}{r - 1}$ and $l = ar^{(n-1)}$.

$$a = 1.79219$$
$$r = .41595$$

If we raise r to an infinite power, the last term of our series will be infinitely small, and the first term in the numerator of our formula for the sum of an infinite series will approach zero as a limit. Solving for s, we get 3.068 as the coefficient of mediate compound expansion.

These calculations give us an approximate total expansion for Bank C, on the basis of the original loan from the central bank of $55.792, amounting to $171.17. The successive expansions are suggestive of the series of concentric circles caused on the surface of a pool by dropping a stone in the center.

This, however, does not exhaust the possibilities of expansion, since we have traced only those expansions in direct line of descent from an increase in the reserves of C of $55.792 and an increase in the reserves of A and B of $25.44 each. Without going into detail, we may suggest the line of development of auxiliary increments of credit expansion.

When A started its own expansion as the result of the deposit of checks drawn on C, some of this new credit found its way back to the point of origin at C, and another part found its way to B. At B it served as another initial deposit for the support of a series of expansions. Specifically, as A expands during the first round, it incurs an unfavorable clearing balance of $23.98. As has already been pointed out, one half of this finds its way to C, and the other half to B. This amount of $11.599 which B receives is not to be confused with the amount which flows back to it in recurrent and ever-diminishing

tides as the result of its own initial expansion. The latter forces a similar balance of $11.599 into the clearing house *via* A, and thus A is able to begin a second series of successive expansions on the basis of the initial expansion of B, and the latter is in a similar position with respect to the primary expansion of A. These subsequent series of expansive movements have not only a reciprocal influence on expansion, but also serve to inaugurate entirely new movements, from newly established centers. The entire process is one of diffusion, in which credits flow back and forth until a new position of equilibrium is attained on the basis of the increase in reserves made possible by the loan that C obtained from the central bank. When a new position of rest is reached, we find the following situation in the three banks:

Banks	*Loans*	*Deposits*	*Increase in Reserves*
A.....	$1,133.06	$1,133.06	$13.306
B.....	1,133.06	1,133.06	13.306
C.....	1,291.78	1,291.78	29.178
Total increase in loans and deposits			$557.90
Total increase in reserves			55.79

We are interested chiefly in C, which started this movement. Through direct primary expansion it was able to lend its clients $100 on the basis of a loan from the central bank of $55.79. Its coefficient of expansion in this initial stage is 1.79219. Through subsequent reciprocal expansion by other banks, induced by its own initial increase in credit, it adds another $71.17 to the accommodation which it grants its clients. This brings the coefficient of expansion as the result of direct-line expansions up to 3.068. Finally, when all the direct and indirect actions and reactions have registered, its total credit expansion amounts to $291.78, which yields a coefficient of ultimate compound expansion of 5.23.

The other banks, playing entirely passive rôles, have expanded 13.306 per cent.

These final coefficients will not, of course, be realized until the various expansions, simple and compound, have taken place. There will be a certain amount of friction in the flow and counter flow, and the rapidity with which the final outcome will be reached, *if ever*, will depend largely upon the will to expand expressed by the community. It is the willingness of the latter to use the new credit rather than the ability of the banks to extend it which will determine the rapidity of diffusion.

These calculations, it need hardly be said, are intended to indicate the *potential* course of credit expansion. The writer does not wish to suggest that there is anything analogous to physical law. The outcome will be modified by the moods of the business community, political as well as business conditions, the influence of Federal Reserve leadership, and such more tangible factors as gold movements, the cash requirements for circulation, and the position of central bank reserves.

All this is very pertinent to the problem of central bank control. A and B have been able to realize substantial increases in their loans and deposits without being subject to the influence of the central bank. The latter may raise its discount rates, but unless A and B choose to heed the implied warning for other reasons, the rise will have no immediate effect upon them. To the extent that A and B are able to expand their own loans as the result of the initial expansion by C, to that extent is there created a mass of credit expansion over which the discount rate of the central bank has no visible direct control. On the other hand, to the extent that all participate in the initiation of credit expansion, to that extent is the coefficient of expansion of the individual bank raised until it approaches the ratio of deposits to

reserves of the system as a limit. When they all expand equally, the central bank would theoretically have to charge a discount rate equal to ten times the rate charged by banks to their own clients. On the other hand, if only a fraction of the banks expand, regulation of the expansion of those particular banks by the reserve bank through the discount rate becomes more of a possibility, even tho its effective realization is still remote.

One of the formidable obstacles in the path of effective control is the fact that the central bank rate is rarely as high as that which the member bank charges even on its most favored loans. Furthermore, even if only one bank in a system of thousands of banks expands, it knows that it can extend multiple loans to the extent of 1.79219 times the amount of its own accommodation at the central bank, so that the central bank rate, in order to be theoretically effective, would have to be at least 1.79219 times as high as the rate which the borrowing bank was charging its own clients.

If, on the other hand, our bank is one among one third of all the banks which are expanding moderately, say 10 per cent to begin with, the rebound of expansive movements stimulated in other institutions by these expanding banks will soon enable this bank to increase its loans by an amount 3.068 times as great as the increase in its own reserve, and the reserve bank rates would have to be pushed up to new heights in order to be effective. Finally, after a new position of equilibrium has been reached in the community, the bank finds its ratio of credit expansion to central bank loans may be as high as 5.23 to 1. It must again be emphasized that all this deferred expansion takes place without any further resort to the Federal Reserve bank.

If two thirds of the banks expand, the premium on borrowings from the central banks, provided there is a

demand for loans, becomes still greater; and finally, if all the banks expand in the same ratio, bank clearings will offset each other, and the only limit to expansion is that which the law governing reserves imposes. In 1920 one third of the banks were greatly over-extended, one third moderately extended, and the other third normal. There was a condition very similar to that suggested above, where all the banks were moderately extended and as a consequence high discount rates and progressive discount rates had little effect on the magnitude of the credit structure.

To sum up. We find two extremes of multiple loans on the basis of a given amount of accommodation from the central bank or the deposit of cash. At one end we find one bank, in a system consisting of thousands, which has expanded its loans. The reciprocal expansive effect stimulated by the inflation of its own loans is so widely diffused that the resurgence is not felt at all. Under such a condition the bank can lend only 1.79219 times as much as its own net addition to its reserve. At the other end we find a condition of uniform expansion, where a bank can increase its own loans and deposits to an extent limited only by the law.

VII

We have so far ignored the effect of cash withdrawals on this process of expansion, and our theory of credit growth would obviously be defective if we failed to consider this.

The Report of the Joint Commission of Agricultural Inquiry estimates that about one sixth of a customer's borrowing will ordinarily be required in cash.[9] Taking the ratio of equivalent demand deposits to money in circulation for a period of years, we find the proportion

9. Report of Joint Commission of Agricultural Inquiry, part II, p. 18.

to be very close to five to one. Governor Strong in his testimony in the Stabilization Hearings offered a chart which furnished evidence of the same ratio for a period of sixteen years.[1] It may, therefore, be safely assumed that one dollar is drawn from a bank in the form of currency to every five that remain on deposit; or, to put it more accurately, a bank will experience a loss of cash equal to one fifth of its increase in deposits. We know that 20 per cent of a given loan will remain on deposit; but the amount that returns to the bank *via* other depositors and the amount that passes through the clearing house will depend upon the amount of cash withdrawn for use in circulation, and this in turn will depend upon the amount by which deposits have been increased as a result of the loan.

Let X equal the amount of cash lost. If 36.4 per cent of all checks drawn return to a bank *via* other depositors then,
(80 − X).364 equals the portion of a $100 loan which returns to a bank for redeposit, and

$$\frac{20 + (80 - X)\ .364}{5} = X$$

Solving, X equals 9.157.

Thus the average $100 borrowed from a bank in a reserve city which is expanding independently of the other institutions in the system will be divided into the four following elements:

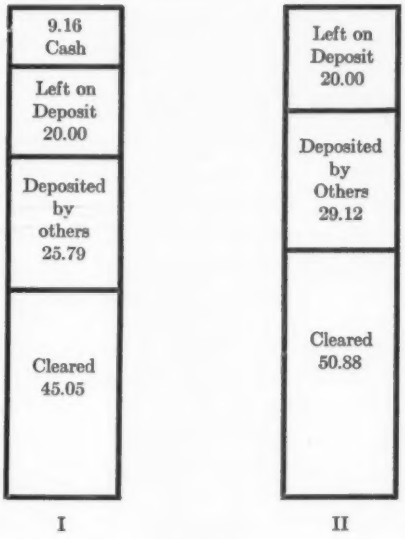
$9.16 will be cash withdrawal;
20.00 will be left on deposit;
25.79 will be redeposited in the same bank;
45.05 will pass through some clearing operation.

As a result of the loan, the bank will lose through direct cash withdrawals or through unfavorable clearing-house balances $54.21. In addition, it will have to main-

1. Hearings before the Committee on Banking and Currency, House of Representatives, 69th Congress, 1st Session, on H. R. 7895 (Government Printing Office, Washington), 1927, p. 422.

tain a reserve of $4.579 against increased deposits. Therefore an advance of $58.789 from the Federal Reserve bank will enable this bank to lend its customers $100. This will give us a coefficient of primary expansion of 1.701. On the assumption that one third of the banks are extending their loans moderately, the coefficient of mediate expansion, modified for cash withdrawals, becomes 2.90 and the coefficient of ultimate expansion becomes 4.97.

The following diagrams represent, for the first cycle, the course of a $100 loan when currency requirements are taken into account and when they are ignored.



I II

The end of our task finds us between two extreme positions. One of these is that the ability of a bank to expand is limited by reserves and that the ratio of bank

loans to reserves for any given bank determines the ability of that bank to expand on the basis of any addition to its reserves. On this basis we have a cofficient of expansion in some instances as high as fifteen. At the other extreme is the position of a group led by Professor Phillips, which holds that a bank can expand by an amount not greatly in excess of the addition to its reserves. My own view is that under exceptionally favorable conditions the former state of maximum expansion is possible for particular banks as well as for the system as a whole. On the other hand there may be times when expansion in excess of an increase in reserves is impossible. These are, however, extreme cases. Normally the ratios of expansion developed in this paper will hold. Ratios of this kind will give scant comfort to those who contend that credit may be controlled by a manipulation of the discount rate.

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THE PLACE OF JOHN STUART MILL AND OF ROBERT OWEN IN THE HISTORY OF ENGLISH NEO-MALTHUSIANISM

SUMMARY

Misconceptions prevalent on Mill and Owen. — I. James Mill, Place, and Carlile, 628. — Hayward's letter of 1873 on J. S. Mill, 630 — His charges and insinuations, 631. — Mill's letter of 1868, 633 — II. Place's statement of 1823 on Owen, 633. — How intimate was Owen's connection with Neo-Malthusianism, 636 — Owen's letter of denial in 1827, 639.

MANY are the misconceptions as to the place of John Stuart Mill and of Robert Owen in the history of Neo-Malthusianism. In so far as economists are informed on the history of this fundamental movement, the view is current that Mill was a staunch Malthusian and not a Neo-Malthusian; that he never went further, even in his private thinking, than to consider "moral restraint" or postponed marriage as the way out of the over-population difficulty; that he was never intimately connected with the early propaganda initiated and directed by Francis Place; and, above all, that Mill, whatever his private opinions may have been, never in print allied himself with those daring proposals that have since been associated with the names of Francis Place, Richard Carlile, Jeremy Bentham, James Mill, Robert Dale Owen, and other "Freethinkers" and "Philosophical Radicals." While in regard to Robert Owen it has been supposed, partly on the authority of Dr. James Bonar, but more particularly on the basis of the research of the late Professor James A. Field, that Owen was directly connected with the *origin* of the restrictive propaganda

of the eighteen-twenties; that it was he, in fact, who was responsible for the introduction into England from France of an important mechanical method of controlling conception. In addition, the going view in informed circles is that Owen was not only a Neo-Malthusian, but that he was the English founder of that school of thought, and that the new check which, it is alleged, he introduced into England was adopted at New Lanark with his knowledge, consent, and encouragement. It is my purpose here to summarize briefly the evidence bearing upon these and allied contentions, and tending to show that the commonly accepted opinions are erroneous.

Since it will not be possible, within the compass of a résumé, to marshal here all the evidence, I have confined my remarks mainly to conclusions, supporting these with only the most definitive and weighty evidence. But summaries of detailed evidence will occasionally be presented.[1]

I

It was exactly two decades after the publication of the second edition of Malthus's *Essay* — that is, in 1823 — that the English Neo-Malthusian movement began in earnest.[2] The doctrine of "moral restraint" had been propounded for the first time by Malthus in

1. A more complete account of Mill's position will appear in the next Historical Supplement to the Economic Journal. A narrative which will treat in detail the case of Owen as well as of Mill will appear eventually (about 1930) in my forthcoming Documentary History of the English Birth Control Movement: 1820 to the Present Day. What follows is a summary only. A fellowship of the Social Science Research Council assisted in making this research possible.

2. In the absence of an accurate and complete historical account in print of the events of the English Neo-Malthusian movement from 1818 to the death of Mill in 1873, the able monograph of the late Professor James A. Field ("The Early Propagandist Movement in English Population Theory," Bull. Amer. Econ. Asso., 4th Series [1911], i, 207–236) might profitably be reviewed as a background for the events and circumstances here related.

the second edition (1803) of his *Essay;* but by the years 1823–26 Place's handbill distribution, his campaign in the working-class newspapers, his training of disciples, and his other ingenious methods of propagandizing were well under way. Altho the laconic reference to Neo-Malthusianism in the first edition of James Mill's *Elements of Political Economy* [3] (1821) had been even more definitive than his vague, if not timid, approval of artificial checks in his "Colony" article in the Supplement to the eighth edition of the *Encyclopedia Britannica*, it remained for Francis Place unequivocably to contend, in that all-too-little-known work of his entitled *Illustrations and Proofs of the Principle of Population* [4] for the superiority of artificial checks over the remedy proposed by Malthus. While these early allusions of Mill, and particularly of Place, had comparatively little immediate influence, their ultimate significance was far-reaching.

Place's handbills, which soon came to be dubbed the "Diabolical Hand Bills," were distributed widely, secretly, and ingeniously in the years immediately following 1823. These "papers" or broadsheets, which were of a medical as well as an economic and sociological nature, were contemporaneously reprinted in journals now rare. In order that they might be more readily available for the reference of students they have lately been reprinted [5] from the originals preserved in the Place Collection at the Hendon repository of the British Museum.

Another form of early Neo-Malthusian literature

3. Pages 34 and 51.

4. Illustrations and Proofs of the Principle of Population: including an examination of the proposed remedies of Mr. Malthus, and a reply to the objections of Mr. Godwin and others. London: Longman, etc., 1822, pp. xv, 280. See especially chap. 6, sect. 3.

5. Norman E. Himes, "The Birth Control Handbills of 1823," Lancet, August 6, 1927.

having a bearing on the Mill problem before us was the series of productions by Richard Carlile, the free-press agitator and disciple of Place. Carlile's acceptance of Neo-Malthusianism, which came as a result of Place's correspondence with him (while Carlile was incarcerated in Dorchester Gaol for blasphemy), was dilatory; but once he had come round to Place's point of view, there was no controlling him. In the May 5, 1825, issue of his journal, *The Republican*, he published a coarse essay entitled "What is Love?" which was most frankly Neo-Malthusian. In response to a considerable demand, the issue was reprinted. Revised and published in February, 1826, as a pamphlet called *Every Woman's Book; or, What is Love?* [6] it prospered to the extent of going through several editions, including an abridged one.

John Stuart Mill's name has been associated with the distribution both of the handbills and of Carlile's productions. But there was little public mention of Mill's relation to the early propaganda until the controversy which arose immediately after Mill's death.[7] At that time one Abraham Hayward, Q.C., made public through the London *Times* and through a letter privately circulated, charges which may be summarized as follows:

(1) That Mill as a young man came to the notice of the police for distributing handbills which gave actual contraceptive information. (In the circular letter Carlile's pamphlet was mentioned in addition to the handbills.)

6. The only authentic, complete edition I have been able to trace (a fourth) is in the Goldsmith's Library, University of London. A photostatic copy is now at Harvard. Professor E. R. A. Seligman possesses a unique copy of the abridged edition.

7. The chief documents on this are: W. D. Christie, C.B., John Stuart Mill and Mr. Abraham Hayward, Q.C. A reply about Mill to the Rev. Stopford Brooke, London, King, 1873, pp. 47. G. J. Holyoake, John Stuart Mill as some of the working classes knew him, London, 1873. Holyoake was, however, in error on most of the chief points involved.

(2) That as a result of this activity Mill was publicly satirized by a contemporary poet.

(3) That Mill was not only a Neo-Malthusian in principle before he reached his majority, but that his opinions persisted throughout mature life.

Hayward further insinuated (but did not specifically state): (*a*) that young Mill accepted this philosophy as a result of the teachings of his father, and (*b*) that he not only approved Carlile's book, but was actually connected with its authorship in such a direct manner as to share the responsibility for its production.

What truth is there in these insinuations and charges? First as to the insinuations. There is reason to believe that as a young man John Stuart Mill was a Neo-Malthusian. But the view that this position resulted solely or even primarily from his father's teachings is over-simple and naïve. Such a contention overlooks the influence of other Benthamites and Philosophical Radicals, notably Place, Grote, and Bentham himself; it makes no allowance for less personal forces. Bentham quite probably, and Grote almost assuredly, were Neo-Malthusians.

As to Hayward's second insinuation, one can state with complete assurance that John Stuart Mill had no connection whatever with the production or publication of any of Carlile's tracts.

The charges (as opposed to the insinuations) advanced by Hayward are of more importance. It is unquestionably true that Mill was upon more than one occasion satirized for his association with the restrictive movement of the time. There is strong evidence, even tho only circumstantial, leading to the conclusion that John Stuart Mill was involved either passively or actively in the distribution of Place's handbills. This was most probably in 1823, when Mill was seventeen. One

cannot be certain whether Mill was himself distributing or whether he was merely in the company of others who were doing so. Judging by several corroboratory contemporary records, young Mill and his group were called before a magistrate charged with dropping down the areas of houses Place's "Diabolical Hand Bills." But the case was dismissed or the indictment quashed. The only admission which Christie, defender of Mill, made to Hayward was that young Mill had been so involved. Stopford Brooke, Alexander Bain, Herbert Spencer, George Grote, and Robert Dale Owen — all personal friends of Mill except possibly the last — accepted the incident as true. In regard to details only was there disagreement.

But even if the ultra-skeptical must consider Mill's relation to the handbill distribution fabulous, there is cogent evidence in support of the belief that Mill was active in other directions. Almost certainly the precocious youth was the author of the *Black Dwarf* articles advocating the new check and signed "A.M." [8] There are manuscripts in the British Museum's Place Collection suggesting that such a conclusion is well-founded.

A more significant question is: Did Mill embrace the Neo-Malthusian point of view in more mature life? Hayward alleged that Mill's birth-control views persisted throughout his later years. It is interesting to note that, while McCabe [9] quotes Bain as asserting that "he [Mill] never abandoned his inner conviction on that point," Bain elsewhere speaks of that "veil of ambiguity" which seems always to have enshrouded Mill's inner meaning on the subject.[1] While certain Secularist debates of the eighteen-sixties and seventies throw some light on Mill's attitude, the most unequivo-

8. Black Dwarf, xi, 748–756, 791–798; xii, 21–23.
9. Joseph McCabe, Life and Letters of George Jacob Holyoake, ii, 64.
1. Alexander Bain, J. S. Mill: A Criticism, p. 89.

cal evidence is contained in a manuscript letter of Mill's to one Haslam of Dublin, the author of a practical pamphlet on family limitation which treated the subject frankly in its medical and physiological aspects. In acknowledging receipt of a copy of the pamphlet, Mill wrote Haslam as follows:

February 19, 1868.

I thank you for your pamphlet. Nothing can be more important than the question to which it relates, nor more laudable than the purpose that it has in view. About the expediency of putting it into circulation in however quiet a manner, you are the best judge. My opinion is that the morality of the matter lies wholly between married people themselves, and that such facts as those which the pamphlet communicates ought to be made known to them by their medical advisers. But we are very far from that point at present, and in the meanwhile everyone must act according to his own judgment of what is prudent and right.

J. S. MILL.[2]

It seems, then, that sufficient evidence is available to demonstrate: (1) that John Stuart Mill as a young man played at least a passive, if not an active, rôle in the distribution of practical literature, and that he was active in the early propaganda to the extent of writing on the subject with the purpose in mind of influencing the working classes; and (2) that Mill accepted in mature life the Neo-Malthusian principle, but entertained it diffidently, preferring not to embark upon any public advocacy.

II

Owen's place in the history of English Neo-Malthusianism is less enigmatical than that of Mill. It was in the course of Place's use of contemporary newspapers in an effort to win over the working classes that he wrote in part to the *Labourer's Friend and Handicrafts Chronicle* as follows:

2. Marie C. Stopes, Early Days of Birth Control, p. 12. Also appears in Contraception, 1st ed., p. 291; 2d ed., p. 330.

> You, I am sure, will give that truly benevolent man, Mr. Robert Owen, credit for good intentions, whatever opinion you may entertain of me, as an unknown correspondent. I will therefore relate an anecdote respecting him. It was objected to his plan [both by Place and by James Mill] that the number of children which would be produced in his communities would be so great, and the deaths from vices, misery, and bad management, so few, that the period of doubling the number of people would be very short, and that consequently in no very long period his whole plan would become abortive. Mr. Owen felt the force of this objection, and sought the means of averting the consequences. He heard of the small number of children in French families compared with English families. He knew from authentic sources that the peasantry in the South of France limited the number of their progeny. He knew that while our unfortunate countrymen were reduced to pauperism, and to six shillings a week wages, the peasants in the South of France received 2s. 6d. a day, which in their fine climate, and with their abstemious habits, enabled them to live in the most comfortable manner. He knew that these people were cleanly, simple and well provided with everything desirable in abundance, and he knew also that they married young. Mr. Owen resolved to ascertain the means by which this desirable state was produced and maintained. He went to France, discovered the means which prevents too rapid a population, and he brought back with him several [specimens of the contrivance there in use], two of which he gave to his friend who had been the cause of this inquiry [Place?]. Mr. Owen no longer feared a too rapid increase of the people in his communities; he saw at once what to him was most desirable, the means of marrying all his people at an early age, and limiting their progeny to any desirable extent. Ask him, and he will acknowledge what is here asserted. Do not then condemn virtuous man to punishment here and hereafter, because he entertains opinions which you call abominable. What Mr. Owen saw would be the greatest of all evils in his communities, is the greatest of all evils in the great community of this nation; and is tenfold increased in the community which composes the Irish people.[3]

This anonymous communication of Place's to the editor of the *Labourer's Friend* was not published directly by that editor. But his friend, James Macphail, incorporated the story — which he quoted verbatim with the omission of a few lines — in a letter to

3. As published in Black Dwarf, xi, 500, and cited by Field, Bull. Amer. Econ. Asso., 4th Series, i, 212–213. See Labourer's Friend, October 1, 1823. The original draft of this letter is in the Place Collection, lxviii, 115. Punctuation modified.

the editor, which he published over the initials "J. M." in the issue of October 1, 1823.[4] Place had, upon a previous occasion, aroused the editor's ire by sending him a similar letter accompanied by copies of the handbills — all of which the said editor burned upon the advice of Macphail.[5] But the Owen "anecdote" did not appear in the *Labourer's Friend* alone. Macphail, noticing the extent to which the *Black Dwarf* was taking up the subject, sent the excerpt from Place's letter to T. J. Wooler, who was then editing the *Black Dwarf*. The account appeared simultaneously[6] with that in the *Labourer's Friend*.

Macphail, in introducing Place's statement to the readers of the *Labourer's Friend*, remarked:

> It is reported that one of his [Owen's] plans is to prevent a too rapid increase of population, and that he has already introduced it among the people employed by him. The reported method is obscure and abominable, [and] contrary to the holy laws of God. It is, indeed, divulged in anonymous printed papers [that is, "Diabolical Hand Bills"], circulated in and about London[7] . . . An anonymous information [he concluded] is not to be believed, but it ought to lead to inquiry.[8]

Wooler, in printing the story, observed that the charge seemed "to require a contradiction from Mr. Owen, if it be untrue."[9] But, for reasons which will presently be made clear, Owen failed to notice the references to his name either in the *Black Dwarf* or in the *Labourer's Friend*.

Richard Carlile, recognizing that the use of Owen's name might be of service in forwarding the propaganda, added fuel to the fire by repeating the story in the *Re-*

4. The numbers of this periodical at the Goldsmith's Library (University of London) are unique.
5. Black Dwarf, xi, 500.
6. Ibid., xi, 499, 500.
7. Labourer's Friend, loc. cit.
8. Ibid.
9. Black Dwarf, xi, 499.

publican. After stating that he saw "the best and most wise of men labouring with a zeal to promulgate *secretly* [italics mine] a knowledge of this plan";[1] and, after recording his own early "prejudice" on the subject, Carlile declared:

> *I think this plan for the prevention of conceptions good . . . and so publicly say it.*[2] Still [he continued] it is not my plan: it was not sought after by me: it was submitted to my consideration [by Francis Place]: and, I am informed, that it was introduced into this country by Mr. Owen of New Lanark. The story of its English or British origin goes thus. It was suggested to Mr. Owen, that, in his new establishments, the healthy state of the inhabitants, would tend to breed an excess of children. The matter was illustrated and explained to him, so that he felt the force of it. He was also told that, on the continent, the women used some means of preventing conceptions, which were uniformly successful. Mr. Owen set out for Paris to discover the process. He consulted the most eminent physicians and assured himself of what was the common practice among their women . . . [which practices Carlile proceeded to describe and justify].[3]

A similar passage appeared in *Every Woman's Book.*[4]

Probably as a result of the currency given this "anecdote," statements to the effect that Robert Owen was directly associated with the early Neo-Malthusian movement echoed and reëchoed down the century. Mid-century writers on Neo-Malthusianism, to quote whom there is no space here, not infrequently referred to Owen as so connected; while even that meticulously accurate Malthus scholar, Dr. James Bonar, wrote in *Malthus and His Work:* "This is not the place to discuss the question associated in our own time with Neo-Malthusianism. But it is probable [the first edition of Dr. Bonar's work read: "But it is beyond all doubt"] that the Neo-Malthusians are the children, not of Robert

1. Republican, xi, 555.
2. Ibid., pp. 555, 556.
3. Ibid.
4. Page 24. Cf. abridged edition, pp. 6, 7.

Malthus, but of Robert Owen." [5] Or, again: "Owen . . . suggests artificial checks, allowing men to gratify desire without the usual consequences . . ." [6] In still another connection Dr. Bonar refers to the Neo-Malthusian criticism of "moral restraint" as Owen's doctrine.[7] But Dr. Bonar in no instance — and this, be it noted, is in great contrast to his usual procedure — Dr. Bonar nowhere makes reference to any authority for these statements.

The late Professor James A. Field, the most learned student that the history of Neo-Malthusianism has ever had, seemed to be of the opinion that Owen was intimately connected with the English origins of this movement. Field pointed out that altho Owen's biographers had failed to mention any such association, and altho Owen vociferously contravened the validity of Malthusian principles, it was still possible to contend that the check might have been in operation at New Lanark.[8] Field's statements on this point were very carefully guarded, but I believe he inclined to the view that they were in use in Owen's community. The same writer cited a passage in Malthus's *Essay* [9] which he thought supported his view; but there are reasons for believing that too much weight was given to Malthus's testimony. Field's suggestion that Owen may have discussed Neo-Malthusianism with Sismondi, during the former's travels on the Continent (1818) is refuted by a statement in Owen's letter published in part below. While in regard to Field's recollection of the undoubted fact that Robert Dale Owen's Neo-Malthusian tract was advertised in *The Crisis*, it is necessary to observe

5. First ed. (1885), p. 14; new ed., p. 24.
6. First ed., p. 219; new ed., p. 384.
7. First ed., p. 226; new ed., p. 396.
8. Field, Bull. Amer. Econ. Asso., 4th Series, i, 214.
9. Bk. III, chap. 3.

that the advertisements disappeared when the joint-editorship (by Owen and his son) ceased. Robert Dale Owen, America's first Neo-Malthusian, and not the elder Owen, was undoubtedly responsible for their insertion.

In view of a statement made by Owen in a letter which follows, the significance of the observations of Bonar and Field is considerably diminished. They are either beside the point or erroneous. It is not true to say that "the Neo-Malthusians are the children not of Robert Malthus, but of Robert Owen." The Neo-Malthusians were the disciples (as regards remedy) of neither. The dichotomy is a false one. Place, and not Owen, was the true founder of English Neo-Malthusianism. Clearly the Neo-Malthusians did not accept Malthus's remedy; equally certain it is that they did not accept Owen's way out. Upon another occasion I hope to amplify the point that Owenism and Neo-Malthusianism were two distinct — in fact, almost exclusive — schools of social thought.

A year after Carlile reprinted in *Every Woman's Book* the substance of Place's story, and two years subsequent to Carlile's publication of it in the original essay in the *Republican*, Owen made a general but unequivocal denial that he had ever introduced any such contrivance into England or that he had ever discussed artificial checks with any of the eminent or other Continentals with whom he had recently had contact; Carlile, he avowed, "had been entirely misinformed on the subject," and had, as a consequence, "unwarrantably used" his name "in a most extraordinary manner." "The facts," he insisted, were "precisely the opposite to the particulars stated" by Carlile in his publication. Owen's communication to the London *Morning Chronicle* of October 8, 1827 read, in part, as follows:

MESSRS OWEN AND CARLILE

To the Editor of the Morning Chronicle,

Sir — Being informed by a friend, a few days ago, of a work published by Mr. Carlile, in which my name was used in a very extraordinary manner I immediately called upon Mr. Carlile, whom for the first time I saw on Saturday last.

On inquiry I learned from him that he had been entirely misinformed on the subject of that publication so far as it concerned myself; and when I informed him that the facts which I had been told were contained in it were, in all respects, the reversal of the truth, he expressed the greatest regret, and offered to make every reparation in his power.

I left him to consider what ought to be done; I called upon him again yesterday afternoon and obtained copies of the publication in which my name had been so unwarrantably used, and for the first time I read them last night.

They are of such a nature, that I deem it necessary to say that I had not the slightest knowledge of their publication, and that the facts are precisely the opposite to the particulars stated. . . .[1]

Owen's denial, which will appear in full in my Documentary History, is sweeping. In the course of reiterating his usual "optimistic" views on population, Owen declared that "the subject alluded to by Mr. Carlile" he had "no other knowledge of, than hearing it mentioned in a general conversation" after his return from the Continent, "when the sentiments advocated by Mr. Malthus on the subject of population, were under discussion."

Altho Owen's public statement raises many points which cannot be considered in this summary I believe his letter was intended to be a thorogoing refutation of the "anecdote" circulated by Place, Macphail, Wooler, Carlile, and others. Perhaps it left untouched the charge that artificial checks were being employed at New Lanark; but an analysis of the Owen–Menzies dispute over "immorality" in that community — which

1. Place's copy of the clipping underlined in his familiar ink is preserved in the last volume of the Place Collection (lxii).

Field seems to have thought as at least of minor importance in showing that the check was being used there — demonstrates almost conclusively that the "immorality" consisted in Owen's neglect of the Presbyterian Catechism in his school. Other issues were, to be sure, involved, but the main source of difference with the Presbytery is to be found in a divergence of religious outlook. There is not a shred of reliable evidence that the check was ever in operation there, at least with Owen's knowledge, approval, and encouragement. Nor am I aware that Place's handbills, the circulation of which I have made a special effort to trace, were ever distributed so far north.

The main reason why Owen did not gainsay Carlile's allegations sooner — there had been a delay of two years, it will be remembered — is to be found in the fact that during the years 1825–27 Owen spent most of his time traveling back and forth between England and America. For extensive intervals in this period, he was at New Harmony or lecturing elsewhere in America. Owen was not aware that the story was in circulation until apprised of it by a friend who called his attention to Carlile's published statements. If Owen ever knew of the *Black Dwarf* and *Labourer's Friend* accounts, there is no record of it.

Still other evidence could be marshaled in support of the view that Owen's association with early Neo-Malthusianism is mythical. But the most important evidence is Owen's complete denial that he had any knowledge of, or connection with, the events or opinions alleged to have been associated with his name.

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THE COLWYN COMMITTEE AND THE INCIDENCE OF INCOME TAX

SUMMARY

I. Introductory: the Committee's work as a whole, 641. — II. Testimony of business men that a general income tax is added to prices, 643. — Refutation by economists, 645. — Statistical analysis by W. H. Coates of the Inland Revenue Department, 647. — III. Assumptions based on some special relation between cost of production and price, 651. — Absolute statement of marginal cost theory erroneous, 652. — Criticisms of Mr. Robertson examined, 657. — IV. Subsidiary arguments: (1) Relation to quantity theory of money; (2) At what rate does a progressive income tax become a part of costs? (3) Dilemma in relation to foreign trade, 662. — V. Distinction between incidence of an income tax and a commodity tax sustained, 666. — Indirect influences on price, 667.

I

"THE keynote of my plea," wrote Marshall, "is that the work of the economist is 'to disentangle the interwoven effects of complex causes'; and that for this, general reasoning is essential, but a wide and thorough study of facts is equally essential, and that a combination of the two sides of the work is alone economics proper." [1] This dictum of Marshall has nowhere been more rigorously adhered to than in the Report of the Committee of Lord Colwyn on National Debt and Taxation in Great Britain.[2] In addition to the Report itself, the Committee has published a volume of Appendices, comprised mainly of statistical memoranda, and two volumes of Minutes of Evidence, consisting of the testimony submitted by representative economists, business men, and government officials. The Report will long be

1. Memorials of Alfred Marshall, p. 437.
2. Report of the Committee on National Debt and Taxation, H. M. Stationery Office, 1927.

regarded as a documentary source of great importance; for the task of the Committee was performed in a singularly detached and impartial manner, and the inquiry comes at a strategic interval since the close of the World War, making it possible to analyze its economic consequences in the cold light of experience.

Viewed as a whole the Report is, says Professor Keynes, "a vindication of the British System of Taxation as it now is." [3] Matters relating to the public debt and questions of taxation have been treated "separately as well as in conjunction." While technical problems of administration were regarded as outside the reference of the Committee, consideration in detail was given to numerous schemes for debt reduction, as, for example, the capital levy. No attempt is made to minimize the heavy burden of taxation, but it is instructive to note the Committee's conclusion that the general standard of living of the working classes has not fallen below the pre-war level. Except for the inordinately high duty on sugar, indirect taxes are found to be justifiable and the burden of direct taxation to be "less crushing than is frequently represented." In the main also the tax system is exonerated of blame for the post-war position of industry.

One of the most interesting and valuable contributions made by the Committee will be found in that part of the Report which treats of the incidence of income tax. As might have been expected, the testimony submitted on the question of whether income tax enters into prices was markedly divergent in character. The mental adzes were whetted to the sharpest edge in the contest between the economists and business men on this issue, with the result that both sides frequently resorted to economic theory in an effort to establish the

3. The Economic Journal, xxxvii (June, 1927), 198.

validity of their claims. In the main, however, the business men contented themselves with general statements, while the economists rested their case both on a priori economic doctrines and on important statistical evidence.

The purpose of the present paper is, first, to review the conclusions of the Committee on the incidence of income tax; second, to consider the validity of the reasoning by which these conclusions were reached; and third, to examine the criticism recently offered by Professor D. H. Robertson, in an article, "The Colwyn Committee, the Income Tax and the Price Level." [4] It is obvious that the incidence of an income tax is not only a "very intricate" problem and one requiring "great powers of abstract economic analysis," [5] but that it goes to the heart of theories of price determination. It is part and parcel of the problem of cost of production and price.

II

The definition of incidence followed by the Committee excludes the popular usage of the term, which, in addition to the initial burden of the tax, covers its "whole range of consequential effects." [6] For the purpose of analysis, it is regarded as desirable to restrict its meaning to the immediate burden of the tax, thus conforming to the customary demarcation between direct and indirect taxation. It is important to note, however, the precaution taken by the Committee in maintaining that the establishment of incidence is only a preliminary step in appraising the effects of a tax. Whether

4. The Economic Journal, Dec., 1927.
5. The Fundamental Principles of Taxation, by Sir Josiah Stamp, p. 130.
6. Report, p. 106.

the bearer of the tax may ultimately gain a compensating advantage, whether the broader reactions may have a deterrent effect on saving and enterprise — these are questions which lie beyond the realm of incidence *per se*.

Having thus defined incidence, the Committee weighed the evidence in support of the view, on the one hand, that "a general income tax cannot be shifted by the person on whom it is laid," and on the other hand, that "it can be shifted and is in fact shifted, in the form of an addition to price." [7] Of the business men who testified, several expressed the opinion that the tax is passed on directly to prices, while most of them stated that prices would be materially affected either directly or indirectly. The latter case would operate in the consequential effects of a tax through a contraction of supply. They were prone to regard all distinctions between the incidence and effects of a tax as of little significance, if not, indeed, fallacious. Under cross-examination the business men, altho at times "baffled to fight better," were unable to substantiate their assertions and were forced to be content with stating them as articles of faith.

Typical of this point of view is the statement by Mr. P. D. Leake that, ". . . apart from current price fluctuations due to changes in supply and demand, the general level of selling prices must inevitably be based upon the cost borne by employers incidental to production, and this cost includes the employer's disproportionate burden of progressive taxation." [8] Again he says, "Income tax, falling as it does almost wholly upon employers, is an unscheduled and unacknowledged factor in the cost of production which causes high prices to be maintained." [9] Mr. R. S. Wright, representing the Na-

7. Report, p. 108.
8. Minutes of Evidence, i, 333.
9. Ibid., i, 331.

tional Union of Manufacturers, held the opinion, "that the difference between direct and indirect taxation hardly exists in actual fact";[1] and Mr. E. B. Tredwen, of the London Chamber of Commerce, in answer to a question by Lord Colwyn, said: "It works in this way. In many cases I have declined to do business because the reward for doing it would be inadequate."[2] Sir Hugh Bell believed that income tax has an indirect influence and ultimately would have a deterrent effect, "so that I should not carry on my business."[3] Finally, Mr. Leake, quoted above, declared the "body of economics today which centers around the marginal principle" (posited by Sir Josiah Stamp) to be "erroneous," and "not applicable to matters of taxation."[4]

In contrast with the foregoing, the economists were unanimous in the view (with one notable exception to be mentioned later) that an income tax cannot be directly passed onto prices. The monopolist cannot normally shift the tax with impunity, for the reason that the price has already been fixed at the point which will yield a maximum monopoly revenue. The competitive trader, on the other hand, labors under still more difficult conditions. Hedged on all sides by forces beyond his control, he cannot directly raise his prices or limit his supply. Thus Professor Pigou testified that, "as income tax is assessed on the profits resulting from trade and industry, and if, as may be presumed, people are already charging the prices that yield them the best profit, the removal by the state of a proportion of the profit will not tempt them to fix prices differently."[5] Relative to its indirect effects, through a contraction of the supply of capital and business initiative, Professor Pigou agreed with Sir Josiah Stamp, that income tax

1. Minutes of Evidence, i, 93. 2. Ibid., ii, 518.
3. Ibid., ii, 604. 4. Ibid., i, 337. 5. Ibid., i, 41.

would be "only a particular case of a general class of discouragement attaching to anything if you do not have the reward of your labor." [6]

Space forbids consideration of similar testimony offered by many eminent economists. We must note in some detail the line of reasoning pursued by them. The arguments in the main are grounded squarely on the determination of price in relation to the marginal cost of production. If there is some variance among the witnesses in their conception of what marginal cost really is, nevertheless the reasoning is premised on the assumption that an income tax falls on profits which arise as a differential surplus above the no-profit concerns, whose costs essentially govern prices. For example, Mr. W. T. Layton held that income tax does not "directly become an item in the cost of production," and that, under competition, production "continues up to that point where the last unit of output makes no contribution towards profit and therefore nothing towards the revenue of the State. This is the unit of production which determines prices, which should therefore be unaffected by a tax on those units which yield some profit." [7] The determination of prices thus tends to focus on marginal costs. Mr. Layton, it should be said, minimizes the indirect effects of the tax, placing very little importance on the view that there is some relation between a given rate of profit and the exertion of effort or the assumption of risks.[8]

6. Minutes of Evidence, p. 48, Qu. 629. 7. Ibid., p. 177.

8. Mr. Layton also stated the matter as follows: "I think I put something like the orthodox view here — the orthodox economic view, not the universal view among business people — that on the whole the tax on income ought not to affect economic action for the reason stated, viz., that prices and the amount of production are determined by the cost of output at the margin where no profit is made, that the Income Tax is a tax on the surplus, and that production will continue under competition to the point where profit stops." (See Minutes of Evidence, i, 186, Qu. 2543 and 2544.)

Similarly, Professor Seligman postulates marginal cost as the controlling factor in normal price, and establishes profits on a differential cost basis.[9] Some producers have relatively high costs of production, and *vice versa*. The monopolist, by raising the price, would suffer a loss both in the decline of profits and in payment of the tax. Hence the tax cannot be shifted. Such differences as ordinarily exist between conditions of monopoly and competition, however, are resolved in the case of a general income tax. If the tax be progressive, the supertax-payer cannot boost the price beyond that maintained by his competitors who are subject to the normal tax rate only. The excess above the normal rate can surely not be shifted. The same effect will follow for a normal and even a proportional tax, since "the price at which the whole supply will be sold tends to be fixed at the point of greatest cost." [1] In fact, Professor Seligman gives the marginal cost theory an extreme interpretation when he says: "At any given time the normal price will tend to equal the highest cost of production." [2]

The most refined analysis of the marginal theory, and that which had great weight of authority with the Committee, is undoubtedly to be found both in the evidence-in-chief and in a special memorandum submitted by Mr. W. H. Coates, who was for some time Director of Statistics and Intelligence in the Inland Revenue Department. Mr. Coates, altho quite familiar with Marshall's theory of normal price, evaluates it as belonging to a "stage that is rarely reached in the actual conditions of life." [3] Indeed, according to his interpretation, it is the contention of the business school that price is determined by production in the hands of representative

9. "Income Taxes and the Price Level," Proceedings of the Academy of Political Science, vol. xi, No. 1. Reproduced as Appendix xii, Report of the Colwyn Committee.

1. Appendix xii, p. 120. 2. Ibid. 3. Appendix xi, p. 68.

concerns. Altho not in accord with this principle, he himself starts with Marshall's laws of marginal utility, demand, and the law of substitution,[4] and builds gradually to the point that "price (i. e., actual price) is always hovering in the neighborhood of that line on which neither profit nor loss is made. . . . Hence the price realized for the marginal increments of supply bears no tax. Yet those marginal increments of supply settle the general price. So the general price also contains no element of tax, and the producer does not recover from the customer any part of the tax that he, the producer, will bear on the result of his productive activities." [5]

Thus it is a part of the general assumption that every producer carries his production to that margin where additional increments will yield neither a profit nor a loss.[6] But what if profits become unsatisfactory because of the tax? The eventual result is not an addition of tax to price, but a tendency toward contraction in supply. Yet if the tax be applied *generally*, the latter effect is of doubtful consequence. It may be that meanwhile there would follow some psychological change in the estimate of reward necessary for a continuance of production. Obviously the issue must be decided, if at all, empirically, that is, by discovering which of the two points of view is more in accord with the facts.

This Mr. Coates attempts to do through a statistical examination for stated years of corporate income tax returns, which were accessible in the Inland Revenue

4. Marshall, Principles of Economics, eighth edition, pp. 93, 99, and 341, respectively.

5. Appendix xi, p. 68.

6. Cf. also the following: "No doubt each producer has a marginal amount of production, that is, a variable quantity the production of which he may hesitate to undertake. And if all producers were equal in ability, the marginal production of any commodity might well be spread over the whole area of production, with a constant tendency on the part of each producer to determine his marginal production by the test of net profits after payment of income tax." (Appendix xi, p. 70.)

Department. Within the limitations of the data, his analysis is a finished piece of work. At the very least, one can only say of it that it demonstrates beyond doubt the potential contributions to economic theory which may be found in the Inland Revenue Department and in the Bureau of Internal Revenue. Its importance was noted by Professor J. M. Keynes as follows: "The data at the disposal of Mr. Coates have enabled for the first time the a priori conclusion of the economists to be subjected to a statistical test — and the test whatever it is worth is very interesting indeed — from which it emerges undamaged." [7]

Because of the general instability of the market valuation of capital assets, the ratio of net profits was calculated, not on the basis of a unit of capital employed, but on that of a unit of turnover. Consistency required also that the returns of individual and partnership traders be excluded, since "earnings of management" are here reported as profits. Such earnings in the case of joint stock companies are deducted in determining net profits. Joint stock companies were listed under seven trade groups, as follows: cotton, wool, iron and steel, metals, food, wholesale distribution, and retail distribution. The percentage of profit to turnover was calculated for the income tax years, 1920–21 and 1922–23, the year 1921–22 having not been chosen because of the radical fall in the price level of that year. Comparisons were also made between the pre-war year, 1913–14, and the post-war year, 1922–23. The years were subdivided into quarters. Cases were classified according to the percentage of profit, ranging at intervals of 5 per cent from those concerns suffering losses of not less than 10 per cent for the first class, to those reporting a profit of 20 per cent or more in the eighth class. Tables were

7. The Economic Journal, xxxvii (June, 1927), 199.

thus prepared showing the dispersion of individual concerns within each class.

The Committee interpreted the results shown by the investigation as affording "strong confirmation of the view that price is determined by considerations into which the income tax does not directly enter." [8] Mr. Coates found no manifest tendency toward a corresponding fall in prices when the standard rate of income tax was reduced from 6s. to 5s., or one sixth, between 1920–21 and 1922–23. Decidedly the most "relevant characteristic," however, is the wide dispersion of firms over the entire percentage range. A considerable proportion of the total production is found at or near the margin. For the year 1922–23, approximately 14 per cent of the total turnover sold at a price below the cost of production.

One is forcibly struck also with the general similarity, over the entire range, of the profits dispersion which was found for the pre-war year, 1913–14, in comparison with the post-war year, 1922–23. For the aggregate of seven industrial groups the following coefficients were obtained: [9]

	1912–13	*1922–23*
Median	4.61	4.11
Lower Quartile	2.53	1.24
Upper Quartile	7.67	8.46
Skewness	*plus* 0.19	*plus* 0.20
Average or mean	5.80	5.43
Mean deviation from median	3.59	6.01

The wholly abnormal conditions which prevailed during this decade might naturally lead one to expect the appearance of many cross-section movements within the seven industrial groups. Such we are told was the case. We note, for example, the aberrations in the cot-

8. Report of Committee, p. 114.
9. Appendix xi, p. 92.

ton industry. In the main, however, internal fluctuations of trade groups tended to cancel. While there is a marked similarity in the profits dispersion for the two years, a glance at the upper and lower quartiles indicates that the dispersion in the latter year was considerably widened.

III

From the foregoing summary of the Committee's conclusion, and the expert testimony brought within its purview, we may turn to an examination of the economic theory on which its deductions are premised. Disregarding sundry variations of statement, it is clear that the reasoning is posited finally on the assumption of some special relation — some causal nexus or governing force — between marginal cost of production and price. Hence it is pertinent to inquire whether the arguments, as enumerated, are in harmony with current doctrines of normal price. (Singularly enough, both the economists and business men frequently appealed to the writings of Marshall to substantiate their claims.) Is the marginal statement incompatible with sound economic theory, and are the conclusions of the Committee, therefore, untenable?

Professor Robertson, in the article referred to above, has advanced some important criticisms against the mode of reasoning accepted by the Committee. Certain of the arguments are labelled by him as fallacious, and others as involving "at the very least a radical departure" from the Marshallian principles. Thus he finds, "a certain looseness in Professor Seligman's conception both of what constitutes the 'costs' of the marginal producer and of the sense in which the profits of the intramarginal producer constitute a 'producer's surplus.'" [1] A similar misconception is attributed to Sir Josiah

1. The Economic Journal, Dec., 1927, p. 566.

Stamp and to the "elaborate and ingenious" analysis of Mr. Coates.

There is abundant justification, of course, for the position that a bald statement of the marginal cost theory is inconsistent with Marshall's teaching. He states clearly enough that marginal cost is not significant for normal supply price under conditions of increasing returns. He counsels us for these conditions to avoid the use of the term "margin" altogether. It may be used when considering short-run fluctuations of price, since demand is here the dominant factor; and since a material increase in production for short periods always "conforms to the law of diminishing and not increasing return." [2] The forces of both demand and supply may doubtless be profitably studied at the margin, but their marginal uses are inter-related factors with price and are in position of both cause and effect.[3] The cost of production which Marshall conceives as being in closest proximity to price in the long run, and which is therefore normal, consists, for a given volume of production, in the aggregate expenses incurred by a representative producer.[4] When a business is managed by entrepreneurs of normal or average ability, when it has no special advantages or disadvantages as regards internal and external economies of operation, and when the capital has had sufficient time to reach a full stage

2. Principles of Economics, pp. 410, 411. See also Appendix H, p. 805.

3. The general theory of value developed by Marshall in his Principles is reaffirmed in his last work, published thirty years later. "Values in domestic trade," he says, "are governed by the general relations of demand and supply. . . . The margin itself governs nothing; its position is governed simultaneously with value by the broad forces of demand and supply. But the manner in which those forces control value can best be studied at the margin." We are told unequivocally in the subsequent paragraph that the margin is the best place for studying the "influence of cost," and likewise the "influence of demand." (Money, Credit and Commerce, Appendix H, p. 321.)

4. Principles, pp. 317 et seq.

of fruition — then the business has become a typical or standard concern in the industry, and the "marginal supply price is that, the expectation of which in the long run just suffices to induce capitalists to invest their material capital, and workers of all grades to invest their personal capital in the trade." [5]

Aggregate expenses of production are in turn divided into prime and supplementary costs, the former including in every-day terminology, such direct expenses as "wages, coal, material, wear and tear of plant, etc." The latter is made up of general charges, such as "interest on capital employed; depreciation of buildings, machinery, etc., otherwise than by actual wear and tear; salaries of officials and others who cannot conveniently be discharged at short notice; and the whole cost of building up the organization of the business both internally and in relation to its customers. And over all, allowance must be made for the earnings (i. e., excess of profits over interest on capital, and insurance) of the heads of the business." [6] The supply of a commodity will tend to be increased as long as the price offered is sufficient to cover the expenses of production, including fairly good profits for the managerial functions.[7]

Economists have been quick to perceive that in the world of facts the normal trend of price is not set by the very highest cost at which any part of the product is brought to market. Because of unforeseen or unavoidable conditions, some producers can always be found who are conducting operations at a considerable loss. This is true in good as well as bad years, and appears to be characteristic in the length and breadth of competi-

5. Principles, p. 497.

6. Industry and Trade, p. 191. For a discussion of direct and indirect expenses, see J. M. Clark, The Economics of Overhead Costs, pp. 56 et seq.

7. Ibid., p. 195.

tive industry. Aside from the circular reasoning involved, such an interpretation of marginal cost would bring it to a *reductio ad absurdum*. Obviously price is not set by the cost, let us say, of that fractional percentage of a commodity which may have been produced at a loss of 20 or 50 per cent. Few economists would gainsay the fact, also, that there is no final causal relationship emanating from marginal cost (in whatever sense) to price. One may call to mind Professor J. M. Clark's statement: "The idea that price is governed by marginal cost of production may be reduced to a tautology; the marginal producer is the producer whose cost of production is equal to the normal price." [8] Marshall breaks "the circular concatenation of phenomena" only by "appealing to the *real* forces underlying what may be called the solar equilibrium of the whole economic system." [9]

The true Marshallian theory, as we are reminded by Professor Robertson, predicates normal price as an average or mean around which momentary price fluctuates. Some producers, having been blessed as preferred children in natural resources and exceptional facilities, and having been endowed with surpassing business ability, fall at the lower end of an ascending costs scale. At the higher end of the scale is the marginal concern; one that is "working under the least advantageous conditions in respect of the assistance it derives from the strictly limited resources of nature, *but under average conditions as regards managerial capacity and human qualities in general.*" [1]

Each producer pushes his output to that limit at

8. The Economics of Overhead Costs, p. 13.
9. Paul T. Homan, Contemporary Economic Thought, p. 235.
1. H. D. Henderson, Supply and Demand, p. 59. See also, Professor Taussig's article in the Quarterly Journal of Economics, vol. xxxiii (Feb., 1919).

which the price in conjunction with the quantity demanded will not "spoil the market." Marginal producers who are hanging on the edge of a precipice because of incompetent management are doomed to disappear, to be followed later by others whose management has likewise become less effective. (To Marshall a cyclical rise and fall in industry appears to be a sort of natural order.) But these are not *marginal* in the sense that they govern normal price, so that their full costs are returned, including profits of management.

The conception of normal price as a mean or average is supported by both Professor Taussig and Professor Pigou.[2] In his illuminating study of prices, conducted during the turbulent period of the World War, Professor Taussig found confirmation of the theory that "normal or long period price" conforms to marginal cost whenever variations in cost arise from natural forces rather than from business capacity.[3] That is, normal price is here determined by cost to that marginal firm which is managed by an entrepreneur of "representative ability." On the other hand, when variations in cost occur because of differences in business capacity, normal price "may be expected rather to conform to average cost." In the latter case, which is characterized by de-

2. For Professor Pigou's theory, see The Economics of Welfare, 2nd ed. (1924), pp. 193 and 755; Industrial Fluctuations, pp. 167–171. Cf. also, The Economic Journal, xxxvii (June, 1927), 187.

3. "Price-Fixing as Seen by a Price-Fixer," Quarterly Journal of Economics, xxxiii (February, 1919), pp. 225 et seq. It is important to note that Professor Taussig arrives at an opposite conclusion from that of Mr. Coates on the relation of marginal cost to market price. (Cf. Memorandum of Mr. Coates, Appendix xi, part ii, section 8, p. 68.) For Professor Taussig tells us that, "The doctrine of price determination by the marginal producer is not to be considered as applying to anything but a *long-run price* [italics mine]. It has no bearing on the short-period, or seasonal price. Only over a period of years does marginal cost have a determining influence on price. . . . The price actually obtaining in any season for a given commodity may be higher or lower than the marginal cost figure reached on the 'bulk line' basis" (p. 226).

creasing cost of production, the marginal producer is hastening toward his own elimination. Let the sporadic instances of extreme high costs be disregarded. Even so, the "dominant price-determining position" is held, not by the marginal producer, but by the representative firm.

Sir Josiah Stamp and Mr. Coates have been chided by Professor Robertson for having forsaken, or having misunderstood, the marginal doctrine as taught in Marshall's value theory. Nowhere, he tells us, has Marshall implied that normal value is specially related to the cost of production of the "most inefficient and unfortunate producers," or that "costs do not comprise a substantial element of profit." [4] Mr. Coates is held to have argued that "the magnitude of net profits" is of no concern in the determination of price. Professor Robertson continues: "That, as Mr. Coates points out, the output of the least efficient producers forms part of the total output whose magnitude helps to determine price is, of course, evident; but to argue from this that there is some special relation between price and the costs of the least efficient producers is a complete *non sequitur*." Thus Mr. Coates is presumed to have departed from Marshall's teaching in underestimating the resistance against cutting prices in a manner to "spoil the market"; and secondly, in assuming all short-periods to be attended by sub-normal demand.[5]

4. The Economic Journal (Dec., 1927), p. 569.

5. Ibid., pp. 570, 571. The fallacy of arguing that the ultimate highest cost is marginal is admirably stated by Professor Robertson as follows: "But the fact that some firms are working at an actual loss, while it raises no additional difficulties on the theory that there is a special relation between price and the costs (including profit) of the representative producer, makes nonsense of the theory that there is a special relation between price and the costs (excluding profit) of the 'marginal' producer. For the latter doctrine loses entirely its apparent simplicity of outline when we discover that in fact the 'marginal' producer is not a man who is making neither profit nor loss, but a man who is making a loss of an undefined and unpredictable amount" (p. 572).

Now I venture the belief that Professor Robertson has presented an *ex parte* interpretation of the term "marginal" as expounded by Sir Josiah Stamp and Mr. Coates. It is doubtless true that the latter has subjected himself to certain inconsistencies of reasoning through a failure to relate his long-period and short-period theory of price. He includes the entire assortment of extra-marginal producers within the marginal cost group, thereby omitting to discard the few extreme instances of high-cost producers, whom Professor Taussig designates as part of the "flotsam and jetsam of economic life." [6] Mr. Coates, indeed, appears to regard his marginal cost theory as incompatible with any doctrine of normal price.

Be that as it may, the essential fact is that Mr. Coates, for sufficient reason, has examined only joint-stock companies. Professor Robertson has ignored the significance of this. The no-profit line of corporations for which wages of management have been figured as a part of overhead costs is an altogether different thing from that of single entrepreneur and partnership firms in which such calculations are not entered. Yet aside from a few types of industry, for example, agriculture, the preponderance of business is conducted under corporate organization. The doctrine of profits is at least simplified and brought into juxtaposition with the business world, if we regard profits as a residuum over and above wages of management. Thus, throughout his paper, Professor Robertson finds himself imperatively using the phrase "excluding profit," or "including profit," to give his words precision.

One may ponder, after all, on the width of the zone between representative firm cost and marginal cost under a proper accounting system for corporations.

6. Quarterly Journal of Economics, xxxiii, 219.

Professor Bullock maintains that, under conditions of competition, "it is not the average cost or the cost to a representative firm, but the marginal cost of production that is decisive in fixing the normal value of all commodities. In this respect, manufactured goods differ in no way from the products of the farm or the mine; and it is at this point that our law of varied costs finds its all-important application." [7] Professor P. G. Wright finds that, under Walker's rent of ability theory, the "marginal entrepreneur operating in a conceptual society becomes Marshall's representative firm operating in an actual society." [8] The only dissimilarity between the two theories, he thinks, is that one is moulded to hypothetical, the other to actual, conditions. From a study of Marshall's particular expenses curve, Professor R. C. Meriam concludes that, even for commodities produced under decreasing cost, "the supply price at the equilibrium point is the cost of the most expensive unit of the equilibrium output. The normal price is thus the marginal cost, in the best sense in which the term is used." [9]

When thus conceived, marginal cost is a quite valid reason for the "a priori distinction" between the "effects of a tax on raw materials and a tax on profits." If it can be verified that a substantial proportion of a commodity is produced close to or below the margin, — as much as, let us say, one fifth or one fourth of the output, — then the more favored producers cannot with

7. "The Variation of Productive Forces," by C. J. Bullock, in Quarterly Journal of Economics, xvi (August, 1902), 503.

8. "Cost of Production and Price," Quarterly Journal of Economics, xxxiii (May, 1919), 562. Professor Wright concludes that the term "marginal" is faulty in that it is "too uncompromising" and suggests "the absolute highest cost"; while the term "representative" is "too compromising," since it suggests an average or modal cost, p. 563.

9. "Supply Curves and Maximum Satisfaction," Quarterly Journal of Economics, xlii (Feb., 1928), 173.

impunity foist the income tax onto price. For, *ex hypothesi*, every entrepreneur carries his production to the point where additional units actually or potentially yield a diminished total net profit. Whereas, therefore, marginal and sub-marginal producers are unaffected by the tax, super-marginal producers are actuated by a compelling force against imposing it. That force is the fear of "spoiling the market" — used in an opposite sense from that of Marshall. If it be valid to assume that an expansion of supply will not be effected by super-marginal producers from the fear of demoralization of the market, it must be valid to assume that a contraction of supply, when a substantial proportion of the production is at or near the margin, will not be attempted for the identical reason.

It is the differential aspect of profits that will not down. The implication of marginal cost (as here defined) is clearly indicated, and the existence of firms at or below the margin becomes a crucial factor in the relative elasticity or inelasticity of supply. Professor Robertson reckons with unwarranted levity when he holds it erroneous to range producers in hierarchical order of magnitude of their costs. Short of empirical proof to the contrary, the differential element of profits, taken in conjunction with the *post hoc* relationship of profits to price, bulwarks the faith of the economist with prima facie evidence that is unassailable.

But a tax on raw materials is a general charge applied in advance of price. The entire schedule of supply is *directly* affected through the imposition of the tax. Submarginal firms which do not add the tax labor under an accentuated disadvantage, while those above the margin will elevate price to the point which will again leave them the highest net return. If diagrammatic representation of normal price is here found to be difficult under

the assumption of a single competitive price, the fault lies "not in our stars but in ourselves." It will be well to examine the premises on which normal price is thus postulated. In my opinion, Professor Pigou does not "presuppose monopoly conditions" in maintaining that, when an equilibrium in competitive prices has been established at a point which will yield the best profit (see above, page 645), people will not charge higher prices because a proportion of the profit has been taken by the State.[1] For income tax acts as an impediment to supply, not directly, but vicariously through its modification of the sources of capital investment and through a change in the psychological estimate of that rate of reward which is regarded as just worth the effort and sacrifice put forth.[2]

Certain economists to whom the theory of the representative firm is not unacceptable have customarily taught that there is an element of surplus in profits, arising from differential costs, which, in contradistinc-

1. Minutes of Evidence, i, 41, sec. 30.

2. Marshall appears nowhere to have expressed in writing his views on the incidence of a general income tax. Professor Robertson states that he has searched his works in vain for an expression of opinion. He quotes the following passage from Marshall's Official Papers (p. 357) in substantiation of his arguments: "Generally speaking, the incidence of taxes on profits is widely and evenly diffused; they run over rapidly from one part of a trade to another, and from one trade to other trades."

I, also, have searched Marshall's works for an expression of opinion, and with no better results. He states at one point that it is prudent to keep "a watchful eye," lest energy and enterprise be checked by excessive taxes on large incomes; but adds in the same paragraph that the "business man of high faculty might not be made much less eager for success by taxation, which took from him and his compeers a considerable portion of their gain" (Memorials, p. 351). It is not unlikely that Marshall reasoned on income tax in an analogous manner to that of rent, to wit: "It is *wisest not* to say that 'Rent does not enter into the cost of production'; for that will confuse many people. But it is *wicked* to say that 'Rent *does* enter into cost of production,' because that is *sure* to be applied in such a way as to lead to the denial of subtle truths, which, in spite of their being subtle, are of the very highest importance scientifically and also in relation to the practical well-being of the world." (Letter to Edgeworth, Memorials, p. 436. The italics are Marshall's.)

tion to a tax on raw materials, will be reached by a general income tax. Acting as an expositor of Marshall's doctrines for business men, Mr. S. Evelyn Thomas views profit as a "rent of ability," which is "measured upwards" from the "level of the entrepreneur who earns a normal profit." [3] In a recent text for students, a similar idea is expressed as follows: "Fortuitous profits above the average cost of production, good and bad years taken together, may be taxed away without affecting the supply of the commodity." [4] Even Mr. J. A. Hobson, lauded by Professor Robertson as the lone economist to sustain the "unwonted rôle of champion of Marshallian orthodoxy," seemingly holds that profits as a surplus above a normal line may be caught within the net of a general income tax.[5]

Factual data bearing upon the truth of the representative firm are not plentiful, but the little that has been brought out of darkness is less reassuring than the economist might wish. The statistical inquiry conducted by Mr. Coates for British joint-stock companies indicates that typical industries showed a steady gradation of concerns from those experiencing wide losses to those realizing large profits per unit of business.[6] Yet in the industries represented, probably no less than 80 per cent of the aggregate business is of corporate organization. Professor Robertson thinks that Marshall would not have been surprised at this; but Mr. J. M. Keynes holds that the "magnitude of the dispersion . . . is so considerable as to do some damage to the conception of the Representative Firm." [7]

3. Elements of Economics, 2nd edition, p. 289.
4. Principles of Economics, by F. W. Garver and A. H. Hansen, p. 637.
5. Minutes of Evidence, vol. i, Qu. 1565 et seq.
6. Appendix xi. Cf. Minutes of Evidence, ii, 637, sec. 10.
7. "The Colwyn Report on National Debt and Taxation," The Economic Journal, xxxvii (June, 1927), 205.

The valuable study of prices which Professor Taussig made in the United States during the World War has already been noted. Cost data were obtained by the Price-Fixing Committee from schedules sent to the several producers by the Federal Trade Commission. Considering the emergency conditions which prevailed, the figures are regarded by him as reasonably authentic. The typical industries were found to be competitive, and "in all these the same phenomena commanded attention, namely, that of marked differences in cost for different producers — a gradual shading from low cost producers at one extreme to high cost producers at the other." [8] The usual cost curves were easily discernible.

IV

Turning from the main lines of Professor Robertson's criticism, we may mention briefly his objections to certain "subsidiary arguments" developed in the hearings before the Committee. There is one common deficiency which he finds characteristic of them all. They are alleged to apply quite as much to local rates or to an impost on raw materials. The first was stated by Sir Josiah Stamp as a corollary of the quantity theory of money. Assuming that there is no change in the quantity of commodities countered against it, how can a general income tax be attended by higher prices? Mr. Hobson had no impromptu answer to this question, but after deliberation replied that it might occur through a "shrinkage of supply." [9]

Such a contraction of supply, while theoretically possible, under the quantity theory, is based on the hypothesis that those upon whom the tax falls will experi-

8. "Price-Fixing as Seen by a Price-Fixer," Quarterly Journal of Economics, xxxiii (Feb., 1919), 218.

9. Minutes of Evidence, i, 127 n. See also Ibid., ii, 652, Qu. 9060.

ence generally an indisposition to effort and also an unreadiness to assume investment risks. But it is hazardous to presuppose the unwillingness of producers to accept a diminished net return on the ground that the reward of their labor is unsatisfactory. Such a conclusion is unjustified until proved by the facts themselves. There is a strong presumption against it; for, if a considerable proportion of entrepreneurs are not affected, the tendency toward a contraction of supply by one group of producers would be followed by an expansion of supply by another group, thus endangering the market.[1]

In the present objection, therefore, the very point which it has been assiduously sought to prove is nimbly recorded as a fact. As has already been maintained, if there is *any* differential element of profits which may be measured above *some* margin or level of cost of production, then the contention is not "equally applicable" to local rates and to a tax on goods in various stages of production. Under the tenet previously advanced by Sir Josiah Stamp, there could not, in reality, be a contraction of supply until some impediment — through a tax or otherwise — acted adversely upon the motivation to production. We cannot avoid paying hostages to the force of a single competitive price. There is no escape from the dilemma that, if the tax be added to price without alteration in the supply schedule, equilibrium will be established, through the magic of currency, at a higher

1. The Committee was apparently unanimous in the view that it would be difficult to experience a general increase of all prices, consequent upon increased income tax, unless the volume of the currency is expanded. In the Minority Report it is declared that "The only remaining way in which increased Income Tax would raise the general level of prices would be by causing a reduction in the volume of production proportionate to the increase in the price level. In this event, however, manufacturers and merchants would lose in reduced sales all that they had hoped to gain in increased prices." (Report of the Committee, p. 379, sec. 98.)

price level, but the relative position will be unchanged. A shrinkage of supply would ensue only as a dubious by-product. The argument remains as before.

Professor Robertson's rebuttal to the second minor proposition involves a like material fallacy. Under varying rates of super-tax, or a progressive scale of normal rates, the question what income tax becomes a part of costs is entirely apropos.[2] The problem is not one of finding an algebraic formula which will measure the effect on prices of a differential income tax on "various sources of supply." Such a statement really beclouds the issue. The argument of the business men tended to hinge upon the *rate* of income tax in relation to the effect upon price.[3] Hence the Committee was moved to ask, "What rate?" Whether under the conception of marginal cost or that of the representative firm, the question is relevant. The analogy drawn between the effect of a tax on raw materials and a tax on income becomes hardly more than a jejune assertion.

The hypothesis that the income tax is added to price leads to a third impasse from which there is no easy extrication. This relates to a nation's foreign trade. Let it be assumed that because of the tax there is a general rise in the prices of domestic commodities. Then, as foreign producers are not subjected to the tax, the equilibrium will be broken and imports will increase. On the other hand, exports, at higher domestic prices, will diminish. Under these circumstances, it would follow that, if the gold standard were maintained, gold would be exported, interest rates would rise, and the price level

2. The question was stated by Sir Josiah Stamp as folllows: "If there is anything in that, I would ask what Income Tax it is that goes into the cost, is it the low Income Tax that small people pay, or is it the high Income Tax which rich people pay, or is it the normal rate of income tax which a company deducts from a dividend? (Minutes of Evidence, i, 48, Qu. 621.)

3. See, for example, Minutes of Evidence, i, 337, Qu. 4700.

would be lowered.[4] The prima facie conclusion is that the tax would not be entered as a part of costs, and no evidence was adduced before the Committee to contradict it. In a modified form the opposite view is supported by Professor Robertson — which again hangs upon the validity of postulates regarding normal price that earlier in his paper he labored to prove.

The weight of authority attaching to the statistical investigation of Mr. Coates can unfortunately be made to depend somewhat upon one's theoretical predilections. Despite the high degree of correlation, extraneous factors which could not be eliminated might have influenced the results. I am disposed to agree with Professor Robertson that the statistical evidence obtained does not prove finally that income tax was not added to prices for the years considered. Nevertheless, the evidence itself, within its limitations, weighs heavily against this supposition. With an increase in the rate of income tax by 328 per cent, between 1912–13 and 1922–23, the median rate of profit on sales declined from 4.61 per cent in 1912–13 to 4.11 per cent in 1922–23. If income tax may be added to price, ipso facto, at the will of the entrepreneur, I doubt whether the conditions prevailing in the "very bad year" 1922–23 would have thwarted the impulse to glean such harvest as there was.

But has the tax as applied to the income of securities effected a rise in the rate of interest? The data inspected do not warrant a confident answer to this question either in the affirmative or in the negative. A high degree of correlation (plus 0.893) is found between the gross yield of consols and an index-number of prices

4. Minutes of Evidence, ii, 652, Qu. 9040. For a discussion of the quantity theory of money under international prices, as bearing upon this point, see International Trade by F. W. Taussig, pp. 198 et seq. Cf. also J. W. Angell, The Theory of International Prices, chap. 13.

during the 100 years from 1825 to 1924.[5] For the short period from 1908 to 1924, the coefficient of correlation is plus 0.90. For the latter period, the correlation between wholesale prices and the net yield of consols after the deduction of income tax is found to be somewhat less, namely, plus 0.74. On the other hand, no close correlation is found for the period from 1885 to 1913, between the same index prices and the rate of income tax.[6] While there is some "implication" from these figures that income tax has not been added to the gross yield of consols, Mr. Coates rightly makes no claim that there is any relationship of cause and effect between the variables.

V

We arrive at the conclusion that the Colwyn Committee was not in error in its deduction that a general income tax cannot normally be passed directly into prices. This deduction is not at variance with sound doctrines of cost of production and price determination. The view of the Committee that the influence of income tax on price will be manifested only through its indirect, consequential effects, is strongly supported by a priori reasoning and by such fragmentary evidence as statistical investigations have revealed. The distinction made by economists between the incidence of a general income tax and a tax on raw materials is not, as some writers have maintained, in conflict with economic theory. It needs only to be said, as the Committee pointed out, that minor exceptions, local and temporary in nature, will be found to the "broad economic argument,"

5. Appendix xi, pp. 101, 102.

6. Minutes of Evidence, ii, 675, Qu. 9330. Professor Robertson, however, asserts that there is a very high degree of correlation (plus 0.94) between the rate of income tax and the price level for the period, 1908–24. The Economic Journal, xxxvii (Dec., 1927), 579.

but these are neither extensive nor important. Such exceptions will occur primarily as the result of some "stickiness" in the adjustment of the forces of competition, or because of a previously existing slack in the competitive price structure.

As to its indirect consequences, suffice it to say that an income tax will, if the rates are made inordinately high, tend to affect the supply of capital and business ability, and to contract the volume of production. Ultimately it must have an influence upon price. The tax will tend to affect the supply of these factors in a twofold manner. It will, first, diminish the economic capacity for saving and thus restrict the scope of individual enterprise. In the second place, it may chill the motivating forces of the individual for saving and for the exercise of business initiative. Both the "physical" and "psychological" effects of the British income tax, however, under the high rates imposed during and since the World War, were found by the Committee, notwithstanding the fact that many business men voiced an opinion to the contrary, not to be of great importance. The danger that sources of new capital would be dried up, that pioneering and hazardous enterprises would not be ventured upon, has proved under the high postwar rates, to be more mythical than real. Assuming the tax to have had some adverse effect upon the capacity to save, in the long run there must be balanced against this effect the use to which the revenue is applied. Much of the expenditure used in cancellation of the internal debt is at once reinvested; while a considerable proportion of the revenue devoted to social purposes is subsequently poured back into channels of production.

The fear of a detrimental psychological influence has proved to be no less unfounded. More than is generally realized, a tax bearing high rates acts, within a limited

range of incomes, as a spur to greater effort. The likelihood that the incentive to exertion will be dampened may easily be exaggerated. In considering effects of this nature, one must not fail to comprehend the significance of the universality of a general income tax within a given sphere. Formerly, too, the burden of risks in industry was confined to a few adventurous persons, but today the corporate type of business organization is predominant and risks are more widely scattered. The corporation, or joint-stock company, is not as sensitive to the imposition of high rates as is the individual entrepreneur. Finally, the reward which is required as a motivating force to business activity is itself a variable factor. The rate of profit demanded in business is determined in a measure by custom. It turns "entirely upon the reaction of people to the conjuncture," in which they live and work. Business men of the younger generation, not accustomed by contrast to a régime of "low taxes" or "low prices," may find themselves, when ushered into an era of high income taxation, relatively unaffected.

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REVIEWS

PIGOU, INDUSTRIAL FLUCTUATIONS[1]

THE extremely high standard set by Professor Pigou in his previous books had led me to expect that in *Industrial Fluctuations* I should find, not only notable contributions to the theory of the subject, but also invaluable material and analyses bearing upon present-day developments. My chief reaction from reading his most recent book, however, is one of disappointment. To be sure, one finds in *Industrial Fluctuations*, as in its predecessors by the same author, sound common sense, well-balanced judgments, and analytic reasoning of high power. But at least so far as statistical data and methods are concerned, the book might have been written fifteen years ago instead of last year. It gives little aid to the interpretation of current economic fluctuations; it fails to discuss the troublesome and perplexing exceptions to many of the generalizations; and it overemphasizes the effects of errors of optimism and errors of pessimism.

In *Industrial Fluctuations* the author has expanded his well-known theory that the dominating cause of trade cycles is to be found in "wave-like swings in the mind of the business world between errors of optimism and errors of pessimism,"[2] into an eclectic theory having as its center the fluctuations of commodity prices and of the expectations of profits. But in constructing his eclectic theory the author covers old ground, for the most part in conventional fashion, relies upon *annual* rather than quarterly or monthly data for his statistical inferences, arrives at generalizations concerning industrial fluctuations which can only be characterized as rough first

1. Industrial Fluctuations by A. C. Pigou. London, Macmillan and Co., Ltd., 1927, pp. xxii, 397.

2. Is Unemployment Inevitable, by A. C. Pigou, G. Cassel and others, p. 103.

approximations, and omits the consideration of many refinements and exceptions that are essential for a useful interpretation of past and current fluctuations or for a working forecast of future fluctuations. The book utilizes very slightly the great volume of valuable data, covering both the pre-war and post-war periods, which have been accumulated since the war, and contributes little that is new to the understanding of fluctuations since the war.

In reply to a criticism of this kind — that the book adds little to the understanding of current fluctuations — the author would probably answer that he had no intention of making any such contribution. In his preface he says that "the conditions prevailing in the great post-war boom and subsequent depression have been so abnormal that I have not examined them here." The abnormal conditions which he probably had in mind when writing these words seem to be those accompanying paper currency inflation and deflation of European countries. He may also have had in mind that in the United States, altho currency is convertible into gold, the federal reserve authorities have handled the gold in such a way as to reduce or annul its normal effects on prices.[3] But I am constrained to say that he has not examined the pre-war data, even those in annual form, with sufficient minuteness to make his conclusions of great value in interpreting "normal" business fluctuations.

The book is an elaboration of chapters on "The Variability of the National Income," in the first edition of the "Economics of Welfare." In the present volume, as in the chapters of the earlier book, Professor Pigou assigns to psychological causes a dominating rôle in producing industrial fluctuations. He introduces his discussion of the impulses behind changes in the expectations of business men, in chapter 3, with the proposition that "the dominant causal factor is not on the side of the supply of mobile resources, but on the

3. Thus, he says (p. 97), "In 1920–21, when low prices drew gold to the United States, the lowness of prices was not counteracted, because the Federal Reserve Banks simply piled up the gold without, in consequence, increasing their loans or lowering their rates."

side of expectations of profit." [4] "The causes of varying expectations of profit from industrial spending," he continues in chapter 4, "may conveniently be separated into three groups, labelled for brevity real causes, psychological causes, and autonomous monetary causes. . . . Real causes consist in changes that have occurred, or are about to occur, in actual industrial conditions; and expectations based on these are true, or valid expectations. Psychological causes, on the other hand, are changes that occur in men's attitude of mind, so that, on a constant basis of fact, they do not form a constant judgment." [5] Autonomous monetary causes are initiated on the supply side of money.[6] "On the one hand, real causes *may* set going psychological causes: actual prosperity, for example, leading people to take an unduly optimistic view of the future. On the other hand, psychological causes *must* set going real causes, for an error of expectation made by one group of business men, leading to increased or diminished output on their part, alters the *facts* with which other groups are confronted." [7]

After examining the real causes of industrial fluctuations, he concludes "that fashion changes, ordinary industrial disputes, and the general run of inventions, improvements and mineral discoveries may, for practical purposes, be disregarded. Large inventions, on the other hand, may be significant, and harvest variations are certainly so; while the great war of 1914–18 brought about an upheaval in industry enormously greater than anything ever experienced before." [8] He then considers psychological influences, the generation of errors, and autonomous monetary causes, in addition to real causes, and attempts to assign to each of these factors its relative importance as a contributor to industrial fluctuations. "Once more," he says, "we must fall back on informed guesswork. My guess is that, if the yield of crops per acre were somehow rendered stable, and if everything else, other than things causally due to crop changes, remained the same, the amplitude of the representative trade cycle would be cut

4. Page 29. 5. Page 30. 6. Chapter 8.
7. Page 31. 8. Page 50.

down, to a less extent, indeed, than it would be if prices were stabilized or if errors of forecast were elucidated, but still to a considerable extent — say, by something like one-quarter." [9]

The discussion of the causes of industrial fluctuations — variations in crops, errors of optimism and pessimism, changes in the supply of money — hinges on changes in the prices of individual commodities and of commodities in general. In fact, Professor Pigou states as a universal proposition that "industrial expansions are invariably characterized by rising prices and industrial depressions by falling prices." [1] Real, psychological, and autonomous money causes, he finds, all register their effects on general commodity prices. Thus "an error of optimism starts processes that raise general prices, and an error of pessimism processes that lower them, thus invoking that factor from another side. "Yet again," he continues, "a rise of prices, however brought about, by creating some actual and some counterfeit prosperity for business men, is liable to promote an error of optimism, and a fall of prices an error of pessimism, and this mutual stimulation of errors and price movements may continue in a vicious spiral until it is checked by some interference from outside." [2]

The facts do not support Professor Pigou's generalization that "industrial expansions are invariably characterized by rising prices and industrial depressions by falling prices." Thus 1925 and 1926 in the United States were years of industrial expansion, as shown by all the leading indexes of the physical volume of production — manufacturing output, pig-iron production, railroad freight traffic, building construction, and kilowatt-hours of electric current consumed. The average wholesale prices of both agricultural and non-agricultural commodities showed no sustained advance in 1925, and in the second half of that year both groups of commodities began a decline which continued, with only slight interruptions, throughout 1926. Meanwhile the total monetary volume of business transactions, as indicated by bank debits outside New York City, rose to new high levels in each of the two years. And the period 1925–26 in the United States is not

9. Page 203. 1. Page 28. 2. Page 188.

the only one of divergence in the movements of general wholesale prices on the one hand, and the volume of industrial production and bank-check payments on the other. Another striking instance in the United States is the period 1886–92, when the generally upward movement of business was reflected by bank clearings, but not by commodity prices.[3] There is evidence that in the United States, and other countries as well, still other periods of six months or more can be found, during which wholesale commodity prices and industrial production moved in divergent directions. The facts, therefore, indicate that average wholesale commodity prices have not invariably been a good index of industrial or business activity.

The conclusion just stated should not be interpreted to mean that *in general* the movements of commodity prices have not agreed with those of industrial production. On the contrary, an index of wholesale commodity prices for most years accurately reflects industrial expansion and contraction.[4] But a price index is only an approximation to an index of industrial activity. Tha important exceptions to the rule make the unqualified proposition of the author clearly invalid. Further, the basis of procedure is faulty. A generalization such as that quoted cannot legitimately be made solely on the basis of the examination of annual data, which do not reveal the directions of movements within the year.

Professor Pigou relies mainly, as has been said, upon annual data for his statistical support. As "a rough measuring rod" of industrial fluctuations in the United Kingdom, he selects the annual percentages of general unemployment, inverted, for the period 1854–1913.[5] When he comes to the discussion of "monetary and banking arrangements as a condition

3. Cf. Review of Economic Statistics, Jan., 1927, "An Index of General Business Conditions, 1875–1913," by Warren M. Persons, pp. 27, 28.

4. Cf., for instance, Supplement to the Review of Economic Statistics, June, 1922, "British Economic Conditions," pp. 161–165.

5. This series is plotted on a chart with the annual figures for consumption of pig iron in tons in the United Kingdom (chart II, p. 12). Inspection of the chart leads the author to the conclusion that the two series move together, in the sense that their upward and downward turning-points roughly synchronize.

affecting the operation of non-monetary impulses," he compares, as the first step in his argument, annual unemployment percentages and the sum of bank clearings recorded by the London clearing house.[6] His method of ascertaining the covariation between these two series (and of other pairs of series as well) is to inspect a chart upon which the two series of annual figures are plotted. Inspection of the chart for unemployment and bank clearings leads him to the conclusion that the two indexes "are associated together very closely." If we examine the data minutely, however, we shall find that his statement is hardly warranted by the facts he presents. In the following examination of his generalization concerning the covariation of series, we shall not rely on mere inspection of charts, Professor Pigou's method, but on a detailed count of the cases in which the movements of the two indexes agree or disagree.

During the period covered by the series for unemployment and bank clearings, 1871–1914, there are 43 pairs of annual differences.[7] Of these 43 pairs of differences I count 28 pairs with unlike algebraic signs, 13 pairs with like signs, and 2 pairs in which there was no change from one year to the next in one of the two series. It appears then that in 65 per cent of the cases, an increase of unemployment was associated with a decrease of bank clearings, or a decrease of unemployment with an increase of bank clearings; but in 30 per cent of the cases unemployment and bank clearings moved in the same direction; and in 5 per cent of the cases unemployment remained constant and clearings changed. Professor Pigou makes no mention of the numerous exceptions to the rule, amounting to about a third of the cases. Moreover, between 1895 and 1914, there is a rapid upward trend in clearings which renders the correlation obscure. The author calls attention to this fact, but says that the correlation is "still visible to any one who looks carefully." [8]

6. Page 117, and chart XII. Up to this point his discussion, as he says, "has been carried on without reference to the mechanism of money."

7. By "annual differences" is meant the difference between the items of any year and that of the preceding year.

8. Page 116.

I cite this comparison of these two series at some length, not because I think that it is of leading importance in the author's argument, but as an illustration of his reliance upon annual data, and on rough and ready statistical methods, and of his neglect of the exceptions to the general rule he states. My own comparison of the two series by means of annual differences, also a rough and ready statistical method but not so rough and ready as that used by the author, leaves me unconvinced concerning the significance, or lack of significance, of the correlation in question and therefore of the part played by money.

"The intimate part played by money," he continues, "is brought out still more clearly when the employment percentages are set beside an index of price movements." [9] The annual percentages for general unemployment, 1850–1914, are compared graphically with Sauerbeck's price index, with trend eliminated,[1] and the conclusion is reached that "except for the drop in employment between 1860 and 1863, which was, no doubt, due to the cotton famine consequent upon the American Civil War, there is no main movement in one curve unaccompanied by a movement in the same sense in the other." [2] In fact, however, between 1870 and 1914 (taking the unemployment percentage *inverted* in order to make the author's chart and textual discussion correspond, and computing annual differences in order to verify his deductions from inspection of the chart), there are 10 pairs of annual differences with unlike algebraic signs, 7 pairs in which one of the pair of annual differences is zero, and 27 pairs with like signs. That is, divergent annual movements occurred in 39 per cent of the cases, and movements of like algebraic signs in 61 per cent of the cases. The number of divergent annual movements of the two series is certainly large enough to cast doubt upon the generalization that "industrial expansions are invariably

9. Ibid., p. 118.

1. Chart XII, p. 120. The downward trend, 1871–96, and upward trend, 1897–1914, are eliminated by a rough arbitrary correction (see p. 118).

2. Page 118.

characterized by rising prices and industrial depressions by falling prices."

Numerous other comparisons of pairs of annual statistical series are presented by Professor Pigou. I have found the annual differences, counted the agreements and disagreements of corresponding annual differences, and summarized the results of these operations in the note on page 677. It will be noticed that in a number of cases he uses three-year moving averages. This is a questionable, and indeed, I think, an indefensible procedure for the purpose of testing correlations which, by hypothesis, ought to hold for time intervals of less than a year.

In this review, confined in the main to certain features of the book, I have emphasized the fact that I have found significant exceptions to the generalizations of the author. These exceptions have been emphasized because, first, they are numerous and undeniable, and second they are exceedingly important to the student of the *applied* theory of industrial fluctuations. They raise such questions as the following. Do the movements of employment figures and wholesale price indexes fail to correspond in certain cases because one or both series are inadequate indexes of industrial fluctuations? If general wholesale price indexes sometimes fail to reflect business movements, are there price indexes of special groups of commodities which do reflect such movements? Or, is it possible that production may be so organized that general industrial expansion may take place without the stimulation of an increase of commodity prices? The most striking of these exceptions is the concurrence in the United States during 1925–26 and numerous other years of expanding production and declining commodity prices. Upon these points the book in hand gives us no light.

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CORRESPONDENCE OF THE YEAR-TO-YEAR DIRECTIONS OF MOVEMENT OF PAIRS OF SERIES COMPARED IN PIGOU'S "INDUSTRIAL FLUCTUATIONS"

Series Compared	Number of Chart	Period of Comparison	Number of Pairs of Annual Differences			
			Total	Like Sign	Unlike Sign	Zero Changes
General unemployment percentage inverted and consumption of pig iron in tons in the United Kingdom	Part I, ch. 2 (p. 12)	1854–1913	59	38	17	4(*a*)
General unemployment percentage and clearings of the London clearing-house	Part I, ch. 12 (p. 118)	1871–1914	43	13	28	2(*b*)
General unemployment percentage and Sauerbeck's price index with trend eliminated	Part I, ch. 12 (p. 120)	1870–1914 1850–1914	44 64	10 17	27 40	7(*c*) 7(*c*)
General unemployment percentage inverted and annual increases of bank credits	Part I, ch. 13 (p. 130)	1880–1913	33	20	10	3(*d*)
General unemployment percentage inverted and annual increases of bank credit: 3-year moving average	Part I, ch. 13 (p. 132)	1880–1913	33	21	11	1(*e*)
Moving 3-year averages of unemployment percentage inverted and rate of price change	Part I, ch. 15 (p. 150)	1880–1913	33	24	6	3(*f*)
Moving 3-year averages of unemployment percentage inverted and rate of credit change (allowance for trend in latter)	Part I, ch. 15 (p. 150)	1880–1913	33	16	7	10(*g*)
Moving 3-year averages of rate of price change and rate of credit change	Part I, ch. 15 (p. 150)	1880–1913	33	13	8	12(*h*)
Index number of prices (trend eliminated), and index number of credits outstanding (trend eliminated)	Part I, ch. 15 (p. 152)	1878–1914	36	17	10	9(*i*)
General unemployment percentage inverted with rate of change of general prices	Part I, ch. 21 (p. 194)	1871–1914	43	22	16	5(*j*)
Moving 3-year averages of annual increases in aggregate money wages and in aggregate credits outstanding	Part I, ch. 21 (p. 196)	1880–1912	32	18	11	3(*k*)
General unemployment percentage inverted with rate of real wages	Part 2, ch. 1 (p. 218)	1851–1910	59	33	21	5(*l*)
Sauerbeck's index number of general prices — base 1867–77 — with proportion of reserve to liabilities of the Bank of England	Part 2, Ch. 6 (p. 256)	1850–1911	61	15	36	10(*m*)

(*a*) One with pig iron down, one with zero changes in both, one with unemployment up, and one with unemployment down.
(*b*) One with clearings up and one with clearings down.
(*c*) One with unemployment up, three with unemployment down, and three with prices up.
(*d*) One with unemployment up and two with bank credits down.
(*e*) One with unemployment up.
(*f*) Three with unemployment down.
(*g*) Three with unemployment down and seven with unemployment up.
(*h*) Three with price change down, six with price change up, two with credit change down, one with zero change in both.
(*i*) Three with price change up, two with price change down, two with credits change up, and two with credits change down.
(*j*) One with prices down, one with prices up, two with unemployment down, and one with unemployment up.
(*k*) One with wages down, two with credits down.
(*l*) Two with unemployment down, one with unemployment up, one with wages up, and one with zero change in both.
(*m*) Four with prices up, two with prices down, three with reserve proportion up, one with zero change in both.

HAWTREY, THE ECONOMIC PROBLEM [1]

SINCE the publication of *Currency and Credit* some years ago, Mr. Hawtrey's work has increasingly commanded the attention of economists. No one in the recent years of monetary chaos has presented monetary facts more lucidly, or analyzed monetary problems more competently, or developed monetary theory with such an enlightening range of suggestion. When a man who displays such superb exactitude of thought in the restricted field of currency determines to let his mind play over a wider range of human affairs, one is interested in discovering whether his peculiar merits are of a sort to carry over. Beyond his grasp of objective facts, his excellence has lain in his analytical qualities, in the clearness of his premises and the straightness of his thinking through the processes of deductive logic. It might be supposed, then, that in a larger view of economics, he would find himself most closely allied to those economists who make economics a logical exercise.

Any such supposition melts away with the opening words of the book: "Man is a rational animal, and if human affairs are hard to regulate, his twofold nature is usually the cause. Reason is something ultimate: it would be the same in another planet, or in another universe, as it is here. Animal nature is something contingent; it might have been different. Our life is a compromise, a blend between the animal and the rational. . . . Our animal nature is, as it were, the soil from which both reason and society have sprung, and it has entered into their very substance." At the very outset the discussion is projected into the field of psychology, and the subsequent analysis ranges itself uniformly and consistently around the subject of the motivation of human beings who are at once rational *and* animal.

It is, Mr. Hawtrey supposes, a commonplace that the action of animate beings is directed toward the accomplish-

1. The Economic Problem, by R. G. Hawtrey. Longmans, Green, & Co., 1926.

ment of certain ends. In the case of animals the end is not clearly foreseen, the means of accomplishing it arises entirely out of the instincts, and the continuance of the species rests upon the suitability of the environment for furnishing the physical conditions necessary for survival. When, however, reason (defined on page 2 "as meaning not merely the power of drawing inferences, but the whole faculty of judgment") intervenes, the ends may be foreseen and the means calculated. The great difficulty that arises in the analysis of human affairs lies in the fact that certain ends are set primarily by the instincts with little intervention of rational choice; others are institutional, directed by that sense of obligation, so powerful in primitive communities, which is best described by the word "taboo"; while others are deliberately and consciously chosen. Reason, meanwhile, intervenes to assist in the accomplishment of instinctive and institutional ends, and to rationalize the ends themselves. A study of modern civilized communities must then proceed to some extent upon the plane of animal psychology, to some extent on the plane of primitive anthropology, to some extent on the plane of the action of rational men.

The motives of action are in the last analysis the motives of individuals. The ends to be sought can never, however, be strictly individual ends. Men live in groups. They may consciously set ends for the group itself, or by group action modify the means by which individuals seek their own ends. The problem is that of acting together, of organizing the life of the community in a way designed to promote the ends which are deemed to be of common interest. It is from such a line of analysis as this that Mr. Hawtrey arrives at his definition of the "economic problem" as "that of utilizing man's capacity of joint action. It includes the selection of ends and of means."[2] As defined, it might more properly be called the "problem of civilization." It is more by suggestion than by any overt delimitation that Mr. Hawtrey displays a field of action distinctly economic. There is a general presumption that economic action is that directed toward the provision of

2. Page 6.

the material means of life, and the economic problem is that of organizing these activities, not technically, but in the matter of wider social adjustment. How pervasive he conceives the economic field to be is disclosed in the astonishing statement that "Civilization may be defined as the application of rational direction by human volition to the solution of the economic problem." [3]

The problem of selecting ends for a social group, Mr. Hawtrey perceives to be fundamentally not a scientific but a philosophical one. The interesting idea is put forward that, in criticizing human conduct, philosophy performs a practical service by reason of its insistence that everything shall be taken into consideration. "For whereas abstract theorizing isolates some aspect of its object, and its conclusion applies only to the part so isolated and never to any actual concrete thing, practical judgment always has to deal with actual conditions as a whole, and cannot afford to disregard any thing relevant." [4] As scientist, the economist need not set up ends, but he may not ignore the fact that his operations take place in a sphere where ends are the important matter, nor may he evade or side-step a critical examination of social ends, since they are controversial and changing.

Since all rational social action must be subordinate to the ends envisaged, the function of the social sciences must, unless they are to be academic and meaningless games, fall into some organic relationship to social purposes. They must, for example, furnish inductive evidence concerning the nature of human motivation, that the ends may be rationally chosen within a range which is possible of attainment, human beings being what they are. They must also contemplate "the problem of so employing human motives in the interest of joint action," [5] devising and criticizing ways and means, serving as counselors to reformers and statesmen. Where their services at any given time will be most required will be determined by the problems most directly confronting organized society at that time. It is their part to bring light to those regions where human wisdom finds itself temporarily

3. Pages 393, 394. 4. Pages 382, 383. 5. Page 6.

baffled, as exemplified at the present moment by such problems as cyclical unemployment, industrial disputes, imperialistic wars, the distribution of wealth and the direction of consumption.

To confine economic science to the elaboration of laws deemed to explain the operations of society as at any given time organized seems to Mr. Hawtrey to side-step the whole problem. That is, indeed, a fruitful if limited sphere of investigation. One must understand the social environment. In a limited way it may lend itself to explanatory generalizations. But if these be elaborated into a highly systematic pattern by mechanistic devices, the result is to obscure the existence of social ends, the subordination of ways and means to those ends, and the potential multiplicity both of ends and of ways and means. One may misinterpret Mr. Hawtrey here. He is not as explicit as one might wish. But the whole train of his argument is antipathetic to any highly systematized body of economic theory. Deductive logic, the tool of system building, appears to be limited in its usefulness to those narrow and specific fields of analysis where one may, with relative accuracy, postulate rational self-interest and a mechanistic relation of cause and effect.

If one appears to linger unduly over those general considerations that Mr. Hawtrey briefly proposes in his first and last chapters, the excuse is that they furnish the key to the rest, and that they bear directly upon the present problems of economic theory. The body of the book undertakes, in the first place, to present the solution of the economic problem which has been adopted, or has grown up, in the western world, the individualist solution; in the second place, to elaborate the picture of human nature; and finally, to undertake a "critical and speculative" scrutiny of the economic order. To the last of these purposes more than half the volume is devoted.

Of Mr. Hawtrey's descriptive account of contemporary economic organization, little need be said. "Fundamentally and in principle individualist," it operates on the basis of free exchange. It is thus to markets that he first addresses

himself—the commodity markets, the labor market, the capital market, the international markets, and to such allied topics as costs, profits, population, and so on. The material is mainly descriptive, but there seems to lurk in the background the whole of Marshall's scheme of normality. "Normal profits" and "the economic rate of wages" are, for example, recurring phrases, but the validity of such concepts seems later to be demolished. In this part of the volume one waits in vain for the emergence of Mr. Hawtrey's virtue of illuminating familiar material, except in the discussion of finance, where his peculiar competence reasserts itself.

As one moves on to the psychological chapters, the atmosphere brightens. The motives of the market, their mixed rational and non-rational character, are dealt with in such terms as love of money, love of power, love of independence, ambition, and ostentatious expenditure, with applications to acquisitive zeal and labor unrest, and with a touch of criticism. "The taint of the money test infects all careers."[6] The family relationship is presented as an instance of taboo, "the unreasoning but intense belief in the obligations of the family," an angle of analysis which permits a telling dig at the classical economists who took the family for granted. "It is curious that this dogmatic confidence in the adequacy of the taboo should have attached itself to a system which was ostensibly based on the all-sufficiency of enlightened self-interest."[7] As page follows page, it becomes obvious that Mr. Hawtrey, having eliminated the conventional earlier chapters from his system, is warming up — if so coldly objective a writer may be said to warm up — to the task of exposing to view what curious things the working rules of this society of ours are. The state, like the family, is submitted to clinical examination, and the sentiments of patriotism and respect for law are exposed as, in origin, a further instance of taboo, commingled in our later day with a degree of rationality. In attempting a psychological view of markets, the family, and the state, Mr. Hawtrey says much less than might

6. Page 146. 7. Page 153.

be said of the relation of psychology to economics, but what he has to say is undeniably relevant.

Of the "critical and speculative" chapters, the scope is too wide to permit any extended comment. They are of unequal value. Those on consumption run in terms that would commend them, at many points, to Veblen and Hobson. A good brief statement of the causes of the inequality of income is given, and the ethical problems involved are discussed, but the battle is not fought to a decision. The merits and demerits of individualism as a producing system are considered. On subjects such as these the treatment is competent, if uninspired.

At intervals, however, Mr. Hawtrey's mind arouses itself. We are not, for example, aware of any more penetrating analysis than appears under the uninforming heading of "Wealth and Value" to prove the necessity of ethical implications in all lines of activity involving joint action, and the consequent inability of economists to escape ethical questions. Nor are we aware of having encountered any more stimulating discussion of Mercantilism than is to be found in chapters twenty-one to twenty-five. Mr. Hawtrey has no love for the cult of national power,— it is stigmatized as a "false end,"— but he is scrupulous in presenting and displaying the strength of the arguments for mercantilistic policy, especially such as are connected with latter-day imperialism. The discussion of the export of capital is in his very best analytical style.

Recurring to the subject of "ends," which he temporarily mislays but never abandons, Mr. Hawtrey emphatically binds himself to "welfare" as the true social aim. The "false ends" with which, in the modern world, it comes most directly into conflict are national power and money-making. These suffer, under analysis, from the defect that they are not primarily rational, in any intelligible social sense. They are themselves at times complementary, at times antagonistic; but pushed to their logical extremes of militarism and plutocracy, they of necessity breed dissension and distress. For groups faced by the necessity of perfecting an organization for joint action,

a principle of harmony is required; nor does the difficulty of defining welfare weaken the fact that some conception of it, frankly ethical, must engage men's minds if they are rationally to direct their activities.

It is this pervading orientation of economic discussion around the question of ends, together with the appeal to psychology and anthropology, that makes *The Economic Problem* interesting and important in current economic literature. These are strains of thought with which American economic theorists have of late been experimenting, but one does not recall having seen them so explicitly avowed in English economic literature, except by those who are the proponents of radical social reorganization. When a master craftsman in that art of analysis so strongly characteristic of the economist's tradition comes to orient his labors in so new a setting, one may wonder whether the sterility which marks so much of recent English economic theory is not about to disappear. It is encouraging to see the process forwarded by one who, in no iconoclastic temper, accepts new ideas without losing the exacting standards of thought which are so essential to the economist's function.

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RICARDO'S NOTES ON MALTHUS [1]

THE publication of Ricardo's letters to Malthus in 1887 was at once the result and the cause of a renewed interest in Ricardian economics, an interest which produced the keen and sympathetic interpretations of Ricardo that came at that time from the pens of Marshall, Bonar, Patten, and others. It was this attempt to "rehabilitate" Ricardo which turned the attention of Professor Hollander to the subject, as he avows; and to no one more than himself is due the apprecia-

1. Notes on Malthus' "Principles of Political Economy"; edited with an introduction and notes by Jacob H. Hollander and T. E. Gregory. Johns Hopkins Press, Baltimore, 1928.

tion and understanding of Ricardian economics that the present generation possesses. With the able cooperation of Professor Gregory, he has now substantially added to that valuable service with the recent publication of the *Notes on Mr. Malthus*, long supposed to have been lost. No one hereafter, it is safe to say, with any pretence to a thorough understanding of the economic thought of Ricardo and Malthus, can afford to neglect the Notes, with the scholarly introduction by Professor Hollander and the able summary of the text of Malthus by Professor Gregory.

It was Professor Hollander's search in 1895 which led to the publication of Ricardo's Letters to McCulloch and to Hutches Trower, and it is largely from these letters that he is able to give us in accurate detail the circumstances under which the Notes were written. Quoting from a letter from Mr. Frank Ricardo, a great-grandson of the economist, he presents the following facts concerning the discovery: "It was, I think, in the autumn of 1919 — or maybe in the spring — that I was going through some furniture stored in a lumber room at Bromesberrow, and I came upon this MS. wrapped in brown paper and casually put away in a box together with some old ornaments. I recognized it as an original MS. of David Ricardo but whether it had been published I did not then know."

The material thus fortunately discovered is in the form of a running comment on Malthus's Principles, written in 1820 a few months after the appearance of Malthus's work. The light thrown upon Ricardo's economics is naturally limited to the problems which Malthus considers; but since these problems comprise the heart of the economic theory of his time and include the chief issues on which these economists divided, it is considerable. The determination and measurement of value, "the nature and progress of rent," the effect of agricultural improvement on the landed interests, the wages of labor, the profits of stock, the distinction between value and riches, the effect of inventions on wages, the effect of foreign trade on national prosperity, on wages, and on profits, all are matters on which they have much to say and

much to differ. Indeed, as Ricardo remarks in a letter to McCulloch, after a second reading of Malthus, "I am even less pleased with it than I was at first. There is hardly a page which does not contain some fallacy."

Professor Hollander, in his hundred-page introduction, takes up these issues one after another, summarizing carefully the arguments of both Ricardo and Malthus, and illuminating the whole with judicious comment. He agrees substantially with Cannan, that it is a mistake to consider "that the economics of the Ricardian school and period were of an almost wholly abstract and unpractical character." [2] The interests of Ricardo and Malthus, at least, were largely determined for them by the events of the war period in which they lived. An understanding of their principles can come only from a consideration of the controversies in which they had been engaged: the reasons for the high price of corn, the effect of foreign trade on profits, the cause of the high value of bullion, and so on.

On the other hand, as Professor Hollander brings out clearly, the different environments of the men predisposed them to different methods of treatment and to varying conclusions. Malthus was of agricultural upbringing and concerned with the interests of the landed class, upon which, as he believed, the traditional social structure of England depended. Ricardo was a product of the commercial and financial milieu of the city. "Environment and experience led him to the opinion that the strength of England and the well-being of its people proceeded from the abundance and cheapness of British capital." The effect of these different predispositions is seen in their views of the nature of rent. To Malthus, rent was the result of the bounty of nature; to Ricardo, of its niggardliness. Their analysis of rent may not have been profoundly affected by this difference, but on many other points Malthus's agricultural leanings and Ricardo's aquaintance with commerce and finance led them to different conclusions.

The common attitude of the historical school and its period toward Ricardian economics, as theorizing *in vacuo*, with very

2. Theories of Production and Distribution, p. 383.

little relation to the facts on the one hand or to practical policies on the other, has given way in recent times to an opinion almost diametrically opposite. Professor Cannan states this opposite point of view with his usual sharpness when he says that, "with them [the early nineteenth-century economists] in the great majority of cases, practical aims were paramount, and the advancement of science secondary." [3] The Ricardians are held by him to have been eager students of the economic events of the Napoleonic period, engaged in building up a body of economic thought for the sole purpose of justifying their attitude on those economic policies which they, for one reason or another, were interested in furthering. Ricardo, in particular, was a man of practice rather than a man of science. "We are indebted to the Bullion controversy for the Ricardian theory of value, and to the Corn Law controversy of 1813–15 for the Ricardian theory of rent and distribution in general. Read with the pamphlets which preceded it, Ricardo's *Principles of Political Economy and Taxation* is intelligible enough. Read without them, it is the happy hunting-ground of the false interpreter."

Professor Cannan has done us a very important service in helping to correct a faulty opinion, but in this instance he may, perhaps, have been led to state his views with unjustifiable sharpness. The Bullion controversy certainly impressed upon Ricardo the importance of a constant measure of values and undoubtedly directed his study toward the discovery of such a measure; but it does not follow from this, nor do I think it can be substantiated, that Ricardo's work on the theory of value had as its primary occasion the justification of his attitude in the Bullion controversy. In the essays on the Corn Law controversy, — "Influence of a Low Price of Corn on the Profits of Stock," and "On Protection to Agriculture," — the relation of Ricardian theory to matters of policy is much more evident. But taking the theory of distribution worked out here together with the analysis in the Principles, one finds a consideration of problems of general economic theory quite disproportionate to a mere interest in

3. Theories of Production and Distribution, p. 384.

the justification of policy. This view is strengthened by a reading of the Notes. It would seem that the period of Ricardo's life which produced the Principles and the Notes was filled with an intense interest in the science of economics as such, without a great deal of consideration of the practical policies which the science might or might not support. Given a knowledge of the problem with which the economists of the time were occupied, the analysis contained in these writings becomes intelligible without regard to practical policies which Ricardo himself favored.

Professor Hollander in the main agrees with Cannan's view which, apart from exaggeration of emphasis, is one in general acceptance among Ricardian scholars at the present time. To him, "The initial chapter 'On the Value' in the first edition (1817) of the Principles was designed less as an independent analysis than as doctrinal basis for certain practical proposals advanced and defended by Ricardo from 1813 on." [4] Ricardo, in defense of the policy of free trade, was interested in demonstrating that such a policy would not result in a fall in general prices. The fall in money wages which would be its inevitable result could not fail to lead to an increase in profits. Yet, despite this justificable emphasis on the importance of policy in Ricardo's economics, Hollander, throughout the long introduction, takes a more moderate and reasonable view of Ricardo's work in theory. Certainly the whole of the discussion between Malthus and Ricardo, on the theory of value and distribution, as presented in the Notes, is carried on with reference to a criterion of general validity, that is, to one of scientific adequacy. Marshall puts the relation between the scientific and practical aims of Ricardo and his value theory very justly when he says that, "he [Ricardo] believed that the connection between cost of production and value was imperfectly understood; and that erroneous views on this subject were likely to lead the country astray in practical problems of taxation and finance; and so he addressed himself specially to this subject." [5]

4. Notes, p. xxiv.
5. Principles, Appendix on Ricardo's Theory of Value, p. 814.

Whatever may have been the origin of the Ricardian theory, it is chiefly interesting to us as a contribution to the science of economics: as a description and explanation of the movement and direction of economic quantities in the economy of his day and, so far as it has a bearing, in the economy of our own period. It is interesting in this connection, tho it throws no new light on the subject, to observe Ricardo's views on the relativity of his own theory as expressed in the Notes. Malthus, as was his wont, in objection to Ricardo's generalizations, raises specific and contradictory facts from the histories of India, South America, and Ireland. Ricardo, after patiently attempting to demonstrate the irrelevancy of such facts, is moved to retort rather sharply that his observations were "applied to this country and not to countries only half civilized." [6] Or again, "But what have all these suppositions to do with England, the country of which I was particularly speaking?" [7] It is perhaps unnecessary to say that in Ricardo's mind these generalizations or principles were of equal validity as applied to other countries economically as advanced as England.

The Notes add little to the theory of value. There is the same confusing statement of value as an "absolute" quantity and as a ratio in exchange, a dual conception which runs all through his theory of distribution, leading to a mass of sterile controversy and a relatively useless conception of wages and profits. His idea of value as a quantity comes out clearly in the statement, "Length can only be measured by length, capacity by capacity, and value by value." [8]

He lifts his eyebrows over Malthus's statement that, "the term real value in exchange seems to be just and appropriate as implying an increase and decrease in the power of commanding real wealth, or the most substantial goods of life." [9] When Malthus accuses him of "confounding the very important distinction between cost and value," [1] he asserts that there is no difference between them. "The [real] value of a

6. Notes, p. 176.
7. Ibid., p. 185.
8. Ibid., p. 13.
9. Ibid., p. 13.
1. Ibid., p. 14.

commodity I think means the same thing as its cost of production, and the [relative] cost of production of two commodities is nearly in proportion to the quantity of labour from first to last [respectively] bestowed upon them." [2]

It is in consonance with this conception of value that there can be a general rise in values even tho exchange ratios between commodities remain the same, if there be a simultaneous and proportionate increase in cost of production. Malthus attempts to make this an objection to the Ricardian conception of value but puts his points so clumsily [3] that Ricardo is able to avoid a clear answer. The fact of the matter seems to be that Ricardo is confusing the theory of value with the special problem of a measure of value. Cost of production may determine value, as indeed it does in the Ricardian analysis in the sense that commodities exchange for one another in proportion to their cost of production. But this is quite a different thing from serving as a measure of value such that increase in cost of production means increased power of exchange for a particular commodity, irrespective of changes in the cost of production of other commodities.

The conception of real value as a measurable quantity identical with cost of production arose out of the Bullion controversy, as Hollander and others have pointed out.[4] The problem involved was the finding of a measure of value, a yardstick by which one might determine whether the value of bullion had gone up or down, and what had happened to the value of commodities. Such a yardstick is not to be found in what we should call a price index. Ricardo is specific on this point.[5] "It has indeed been said that we might judge of its [that is, a money unit] value by its relation, not to one, but to the mass of commodities. If it should be conceded, which it cannot be, that the issuers of paper money would be willing to regulate

2. Notes. The brackets indicate insertions made by Ricardo. A similar statement in the Principles runs: "Mr. Malthus appears to think that it is a part of my doctrine that the cost and value of a thing should be the same; it is, if he means by cost, 'cost of production' including profits."

3. Ibid., p. 23.

4. Ibid., pp. xxiv, xxv.

5. Proposals for an Economical and Secure Currency, p. 162, Gonner's edition of Ricardo's Essays.

the amount of their circulation by such a test, they would have no means of so doing; for when we consider that commodities are continually varying in value, as compared with each other, and that when such variation takes place, it is impossible to ascertain which commodity has increased, which diminished in value, it must be allowed that such a test would be of no use whatever." The result of Ricardo's speculation on this point was that cost of production was the equivalent of value, and that "embodied" labor could be taken as the best practical measure of both cost and value. Not only does the cost relation between two commodities accurately indicate their exchange ratio, but the cost quantity of each is a fair measure of the real value of each. Consequently, it is quite compatible with the Ricardian view that the real value of money may fall even tho its exchange value remain the same, if by chance the cost of production of all commodities, including that of the money metal, should fall proportionately. Or the real value of a money unit might remain the same, tho its purchasing power in terms of commodities in general alters.

This persistent use of a conception of real value as a quantity equal to cost of production runs through and weakens Ricardo's theory of distribution. It makes his statement of the relation between wages and profits a sterile tautology. This is a section of Ricardian theory on which the Notes are very illuminating, for Malthus comes back repeatedly and from different angles to the criticism of Ricardo's views on this matter, and the latter, in defending his position, exposes it in all its bareness. If value is determined by cost of production, and if cost of production is made up of wages and profits, what is the effect of a variation of any one of these elements upon the others? Ricardo's statement of the profits-wages relation in the Notes is very simple. It comes down to this. Value equals cost of production; cost of production equals wages plus profits; assuming that value does not change, an increase in wages must mean a decrease in profits, and *vice versa*. In order to demonstrate this relationship Ricardo evaluates wages and profits in terms of real values

rather than in terms of exchange values (that is, command of labor or capital over commodities) which is the definition Malthus prefers.

That there can be no other meaning in Ricardo's mind is clear from innumerable passages in the Notes. Except for minor qualifications, Ricardo's position in the Notes as in the Principles, is that what we would call real wages is a fairly constant quantity, since population responds readily to an increase or diminution in command over commodities. Despite this fact, wages in the Ricardian sense may be high or low. "The greater the proportion of the value of the whole produce necessary to support the labourer, the higher will be wages." [6] Or again,[7] "Whenever the difficulty of production on the land is such that a greater proportion of the value of the whole produce is employed in supporting labour, I call wages high, for I measure value by these proportions." Ricardo may and does speak of corn wages, money wages, and commodity wages, but the wages concept that he uses in his theory of distribution is analogous to the concept of real value as a quantity; that is, to Ricardo, wages are equal to the cost of production of those commodities which make up commodity wages. It is quite consistent with this that a fall in wages should be accompanied by an increase in the commodities received by labor.

This conception of wages is hotly criticized by Malthus, who esteems wages as the quantity of "necessaries, conveniences and luxuries of life" commanded by labor. He says [8] that Ricardo's conception of wages helps us not at all in determining the economic condition of the working class. To which Ricardo rather weakly replies,[9] "Does my view prevent an examination into the real condition of the labourer? It is true that I say the labourer's wages are high if he receives a high value for his work, that is to say, if he receives the produce of a great deal of labour. To know his real condition we must still enquire what this produce is in a quantity, the very enquiry made by Mr. Malthus." In other words,

6. Notes, p. 134.
7. Ibid., p. 135.
8. Ibid., p. 133.
9. Ibid., p. 134.

Ricardo seems to have constructed his definition of wages in accordance with his conception of real value, in such a way as to throw light on his theory of the rate of profits, and without regard to those wage problems which a useful wage theory must handle. Marshall, in every place so chary of adverse criticism, allows that in this case "his treatment of wages seems less instructive than that in Malthus' Political Economy." [1]

It follows of course from this notion of wages that profits must vary inversely with wages, since, if the proportion of one of two elements making up a sum increases, the proportion of the other must fall. Of course Ricardo would not deny that the exchange value (that is, the quantity of "necessaries, conveniences and luxuries of life" commanded) of wages and profits cannot rise and fall together; indeed, he frequently asserts it. But he prefers to retain his real value definition of these terms, and emphasizes as of great importance the necessary inverse relationship between them. Malthus cannot see the importance of this relation. "It is merely a truism," he asserts, "to say that if the value of commodities be divided between labour and profits, the greater is the share taken by one, the less will be left for the other; or in other words that profits fall, as labour rises, or rise as labour falls." [2] Ricardo's answer to this pertinent objection is rather evasive. Instead of defending the importance as well as the validity of his generalization he contents himself with saying,[3] "If it is a truism it is not an error, why then notice it as such? It is a truism however which Mr. Malthus to one's great astonishment does not uniformly [admit]."

It is probable that some light is thrown on Ricardo's definition of wages and the statement of the relation between wages and profits by his conception of profits per cent — the rate of profits. It has always been a well-nigh impossible task in the theory of distribution to establish a proportional or percentage relation between capital and the product of capital in any other than money terms. Ricardo answers this ques-

1. Principles, p. 551, note. 2. Notes, p. 141.
3. Ibid. Brackets inserted by the editor.

tion after a fashion with his concept of real value, that is, cost of production. Profits to him means the value, that is, the cost of production, of the commodities accruing to the capitalist through the exchange of the product of his capital. The value of his capital is determined by its cost of production or, as we should say nowadays, by its cost of reproduction. The value, or cost, of the capital is a quantity which may be compared with the value, or cost, of the profits, also a quantity, and a rate of profits may then be determined. It follows from the definition of wages that this rate of profits must vary inversely with wages.[4]

It must not be supposed that the Notes are completely given over to the theory of value and distribution. There is interesting speculation on the probable effects of industrial inventions and agricultural improvements, on wages (money, corn, commodity, and value wages), on profits, rents, and prices. Occasional and flickering light is thrown on the relation between interest and profits in Ricardo's mind, as when he says:[5] "What Mr. Malthus calls a demand for capital I call high profits — capital is not bought and sold, it is borrowed at interest, and a great interest is given when profits are high." The great difference between the nature of the

4. It is interesting in this connection to observe Marshall's explanation of the Ricardian definition of wages (Principles, p. 550, note 1): "Ricardo did not overlook the importance of the distinction between variations in the amount of commodities paid to the labourer as wages, and variations in the profitableness of the labourer to his employer. He saw that the real interest of the employer lay not in the amount of wages that he paid to the labourer, but in the ratio which those wages bore to the value of the produce resulting from the labourers' work; and he decided to regard the rate of wages as measured by this ratio, and to say that wages rose when this ratio increased, and that they fell when it diminished. It is to be regretted that he did not invent some new term for this purpose; for his artificial use of a familiar term has seldom been understood by others, and was in some cases even forgotten by himself." The chief difficulty with this explanation is that the Ricardian conception of wages throws no necessary light on the question of the "profitableness of the labourer to his employer." If profits, in Ricardo's sense, are high, this merely means that the value proportion, not the quantity of commodities, accruing to the capitalist is high.

5. Notes, p. 176.

profits problem in the short and long run is dealt with in one or two places. Long-run profits (necessary and ordinary profits) are in the nature of a supply price for capital and management, a cost of production. Profits in the short run are the products of change and innovation, the reward of enterprise; they are temporary and not a cost of production. An example of short-run profits is seen in "the case of a manufacturer who discovers [an improved] [6] machine with which to manufacture his goods. While competition does not fully act upon him, and oblige him to sink the price of his goods to the cost of production, he gets great profits, but finally the advantage of the improvement rests wholly with the consumer." [7] Then, too, there is the interesting, not to say amusing, revelation of the extent to which Ricardo was willing to carry his conception of labor bought as a commodity by capitalists through the advance of means of subsistence. Malthus says that the proportion of people employed in agriculture is smaller in England than elsewhere. To which Ricardo replies: [8] "This is very possible, and very satisfactory if true, but we must not leave out of consideration the greater number of horses and cattle employed on the land in England; they come under the denomination of labourers, for they are substituted for them, and are supported by provisions like them."

The Notes are probably more important from a methodological point of view than from any other. The quite different habits of mind, methods of analysis, and treatment of material of Malthus and Ricardo are thrown into the foreground. Ricardo is continually giving lessons to Malthus in matters of logical argument. A considerable part of the Notes is given over to a demonstration of why the facts advanced by Malthus have no bearing on the matter in hand. Professor Hollander suggests his opinion of the importance of the Notes in a couple of sentences which reflect his appreciation of both men.[9] "As to Malthus, the commentary will serve to lessen

6. Inserted by Ricardo to replace "a useful."
7. Notes, p. 224.
8. Ibid., p. 178.
9. Ibid., p. cxi.

the neglect which the Political Economy has suffered from the eminence of the Essay. As to Ricardo, definitive evidence will be supplied of the mental tenacity, the logical precision, the philosophical breadth of the profoundest thinker in our science." It is no disparagement of Ricardo as an economist to say that at times, the precision of his logic was bought at the expense of a narrow appreciation of the nature of the problems involved.

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NOTES AND DISCUSSIONS

COMPARATIVE COSTS: A REJOINDER

In the May (1928) number of this Journal, Mr. Arthur F. Burns charges me with misstatement of Ricardo's principle of comparative costs and with erroneous reasoning, because of my failure to appreciate a point which he there makes. The passage of mine which he criticizes is as follows:

"Ricardo's famous arithmetical illustration, translated, without change in its substance, to the form now commonly used, is as follows:

England	*Portugal*
100 days labor = 100 cloth	100 days labor = 125 wine
100 days labor = 83⅓ wine	100 days labor = 111 cloth.

"In order that all the benefit should go to Portugal, 100 cloth would have to exchange for 83⅓ wine. In order that all the benefit should go to England, 100 cloth would have to exchange for 112 wine. But Ricardo concludes that English cloth will exchange for Portuguese wine at the rate of 100 cloth for 100 wine." [1]

Mr. Burns first says: "That a failure to appreciate the point argued in this paper may lead to misstatements is illustrated in a recent article by Professor Viner. This writer restates the classic Ricardian example in 'modern form,' without observing that in the restatement a new assumption is introduced, namely, equality of labor amounts, [and that with such an assumption no greater total product can be said to exist]. [2]

1. Jacob Viner, "Angell's Theory of International Prices," Journal of Political Economy, October, 1926, p. 609.

2. "A Note on Comparative Costs," Quarterly Journal of Economics, May, 1928, p. 499. The issue which is raised by the passage placed by me within square brackets is dealt with later.

This criticism rests on a questionable interpretation of Ricardo, and on an interpretation of my passage which I do not accept as correct. Mr. Burns treats Ricardo's case as resting on the assumption that there are different amounts of labor in England and Portugal, respectively.[3] But Ricardo, so far as I can see, says nothing and implies nothing about the aggregate quantities of labor in England and Portugal. I did not use the words 'modern form.' The form used is the one devised by James Mill as far back as 1821.[4] I deliberately substituted it for Ricardo's form, because Ricardo uses equal quantities of goods with varying units of labor, which makes it somewhat harder to handle the illustration than if the labor-units are made equal. Nor did I introduce a new assumption, "namely, equality of labor amounts." In my illustration the "100 days labor" are units, not aggregates, and nothing is said or implied as to the number of units existent in each country. It is in this sense of units, not aggregates, that James Mill, McCulloch, John Stuart Mill, Taussig, use illustrations of this type. Mr. Burns himself, in a footnote at the very end of his article, concedes the possibility of interpretation of comparative cost examples as presenting labor-units rather than aggregate labor quantities.[5] But if he will make this concession to Ricardo and to my illustration, he will be obliged to concede that I was not open to such of his criticisms as I have so far discussed.

Mr. Burns, after citing the latter part of my passage reproduced above, proceeds as follows:

"It would seem, however, that the argument should run in the following terms: If the rate of exchange were 100 cloth for 83⅓ wine, England would be no better or worse off after than before specialization, Portugal would have more of wine,

3. "Ricardo used only a single example, the celebrated cloth-wine case, and by dint of assigning certain unequal values to the labor quantities involved, he was able to set up a greater product case." Loc. cit.

4. Elements of Political Economy, 1821, chap. 3, section 4.

5. Q. J. E., May, 1928, p. 500, note 8: "It may be retorted that a comparative cost example sets forth only the labor-time ratios among commodities, and says nothing as to the total labor time devoted to these products."

but less of cloth, and hence nothing could be claimed in the way of a commodity benefit."

Interpreting the illustration as if the units of labor were aggregate quantities of labor, he concludes that Portgual will be consuming less cloth and more wine than before trade. Since in Portugal cloth is now cheaper in terms of wine than before trade, this would be a violation of the conditions of equilibrium. He has tacitly introduced the assumption not only that the rate of exchange is on the basis of 100 cloth for 83⅓ wine, but that this represents also the total volume of exchanges. This assumption is quite arbitrary; but any other volume of trade would result in a change in the relative English consumption of the two commodities, altho their terms of exchange remained 100 for 83⅓, or in a failure of Portugal completely to specialize when the conditions of comparative cost demanded it, also violations of equilibrium conditions. Mr. Burns's version of my illustration, therefore, does not permit of trade on as poor terms for England as 100 cloth for 83⅓ wine. It is because the common practice of using illustrations that are non-committal as to the quantities of labor, or the volume of exchanges after trade, avoids such complications, that it is a prudent practice when the problem admits of the neglect of these quantities.

Mr. Burns proceeds further: " . . . and if the rate of exchange were 100 cloth for 112 wine, the converse would hold true — that is, Portugal would be in the same condition after as before specialization, and England would have more of wine but less of cloth, and therefore no benefit in the form of a net commodity increment could be claimed for England."

I can follow this calculation only on the basis that he has tacitly assumed that there will be a total trade of 125 wine for 111 cloth. This is an unobjectionable assumption; indeed, given his assumption as to the quantities of labor existent in the two countries, it is a necessary condition of equilibrium. In the illustration as used by me there was no assumption as to the quantities of labor in the two countries; hence there could be no inference from it as to the volume of

trade which would result. But Mr. Burns's case is a possible one within the limits of that illustration. It is possible, moreover, that England would have less cloth after than before trade as the result of trade on other terms than 100 cloth for 112 wine. Whenever such a result would ensue from trade, Mr. Burns would be justified in his conclusion that "no benefit in the form of a net commodity increment could be claimed for England," interpreting "net commodity increment" as he does. So far as my passage is concerned, however, his criticism again fails to touch it. The term "benefit" was not there used to mean "net commodity increment." The passage under discussion did not even say categorically that there would necessarily be any benefit to England, since this was not involved in the issue there raised. But I was, and am, prepared to commit myself to this position. In the absence of negatively inclined cost curves, any change in the proportions in which a country possesses two commodities as a result of trade, or any change in the terms on which its two commodities are exchanged within that country, if consistent with equilibrium conditions, is a demonstration that the country benefits from the trade.

The test of the existence of benefit which Mr. Burns attributes to John Stuart Mill and which he criticizes in his article, namely, an increase, as the result of trade, in the amounts of *both* commodities which the country possesses, certainly is defective. But its defect, within the assumptions of the classical theory and especially of constant and uniform costs and the objective measurement of benefit, is only a defect of inadequate inclusiveness, of failure to cover all the cases of benefit which may result from specialization in accordance with comparative costs. It may well be that the classical economists did not see this defect,[6] altho few of them used

6. Malthus, however (Principles of Political Economy, 1st ed., p. 462), pointed out, for extreme cases, the same defect in the commodity increment test which Mr. Burns stresses. But Malthus did not conclude from this that cases to which this test could not be applied were consequently cases in which there was no benefit, or uncertain benefit, from trade. On the contrary, he argued, as I do here, that the test was not inclusive enough.

this test of benefit and it would be hard to find one who confined himself to it. John Stuart Mill himself used as a test and measure of benefit the reduction in the cost of obtaining a unit of a commodity by importation from abroad as compared to producing it at home.[7] This test takes care of cases of benefit from trade which would not be covered by the "net commodity increment" or the "greater total product" test. This test was used also by Ricardo,[8] Senior,[9] and McCulloch,[1] and was the only test used by James Mill.[2] In so far as the classical theory can be said to have laid down a "standard" test of the existence of benefit from trade, it was this one rather than the one criticized by Mr. Burns.

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THE INDEX OF THE GENERAL PRICE LEVEL

IN the May number of this Journal[3] Dr. Haberler, of Vienna, considers the problem of a "general purpose index number" (of prices), as Mitchell calls it, and in particular the attempt toward an index of the General Price Level, for which the present writer is responsible. Dr. Haberler has, in a previous publication, enriched the literature of the subject by an

7. Cf., e.g., Principles of Political Economy, Ashley ed., p. 585.

8. "Though she [i.e., Portugal] could make the cloth with the labour of 90 men, she would import it from a country where it required the labour of 100 men to produce it, because it would be advantageous to her rather to employ her capital in the production of wine, for which she would obtain more cloth from England than she could produce by diverting a portion of her capital from the cultivation of vines to the manufacture of cloth." Principles of Political Economy, Everyman ed., p. 82. Malthus interpreted Ricardo as *always* seeing the advantage of foreign trade in its enabling a country to get goods from abroad more cheaply than it could produce them at home (op. cit., p. 461), and Ricardo, in his Notes on Malthus, did not take issue with this interpretation (see, p. 232).

9. Political Economy, 4th ed., p. 76.

1. The Principles of Political Economy, 4th ed., p. 147.

2. Elements of Political Economy, chap. 3, Sections 4 and 5.

3. "The Meaning and Use of a General Price Index," p. 434.

incisive monograph on *The Meaning of Index Numbers*,[4] arriving at somewhat destructive conclusions as to the value of index numbers of prices save as they are devised for some specific purpose. In his recent paper in this Journal, applying the concepts he has previously developed, he concludes that such an index of the General Price Level as I have attempted to construct cannot be regarded as applicable either to the comparison of real income, or as a standard of deferred payments, or to the "explanation" of the business cycle, or as a basis of monetary policy. Dr. Haberler's thought is penetrating and clear; but he deals rather with what seem theoretical than with practical considerations; and it is the practical side which, it seems to me, is of the chief interest. For it should be clear enough now that there is no "ideal" index number; nor can it be an instrument of great precision, but only a very useful expedient or approximation, which may be of high value when used with discrimination.

Let me briefly comment on his criticisms.

1. With at least one of Dr. Haberler's conclusions — as to the relation of the general price level to business cycles — the writer would readily concur. The researches of Warren M. Persons[5] and others have shown clearly enough that these cyclical movements are largely confined to certain types of prices, just as these cycles are themselves largely confined to certain types of industry. With the still general acceptance of these types of business as trustworthy "barometers," or as adequate measures of general trade, it was not difficult to find similar types of prices moving in consonance therewith.

Now that we are coming more clearly to see that what has been called the "business" cycle is largely a production cycle, and is most strikingly illustrated in certain types of basic production, we shall as little expect that a broad composite of all types of prices, embracing alike goods, services, and property, will be very sensitive to such industrial cycles, or afford an "explanation" of them.

4. Der Sinn der Indexzahlen. Eine Untersuchung über den Begriff des Preisniveaus und die Methoden seiner Messung (Tübingen, 1927).

5. W. M. Persons, "A Commodity Price Index of Business Cycles," Review of Economic Statistics, November, 1921.

2. The measure or comparison of "real income" is too broad a subject to consider here, tho it is at least of interest to note that, save in the extremes of the war period, and in the post-war boom, the differences since 1913 between the index of the General Price Level and current indexes of the Cost of Living have been, in general, slight; so that, in a broad way, these Cost of Living indexes themselves seem a fair measure or indication of the average purchasing power of money in this country, and therefore of practical value in the measure of real income. So, also, do we find a close correspondence between this General Price Index and the index of consumers' goods constructed by Professor W. I. King,[6] and also with yet a third index, an "economic index," as he terms it, devised by Dr. W. R. Ingalls.[7]

Unless there was here some approximation to average current prices in expenditure, such a concurrence of these four different kinds of measures would seem improbable. As something like 85 or 90 per cent of the total expenditure of the people of the country is for the direct consumption of goods and services, and only 10 to 15 per cent for more permanent uses, it seems to follow that a verifiable average of prices in these expenditures would be the best measure for comparison of real income, and likewise the nearest approach to an equitable standard of deferred payments that we may ever be able to obtain.

The pragmatic sanction for such a view lies in a consideration which Dr. Haberler disregards, and this is that the vast bulk of the nation's income and expenditure is distributed within a narrow range or mode. This seems clear from the income tax and similar returns, alike of this and of every other country — Pareto's familiar concept. Roughly speaking, it seems probable that, in this country, from 70 to 80 per cent of the population have incomes that range from something like $2000 to $5000 or $6000 per family; that is, broadly, between what might be described as the Ford and the Buick-Studebaker classes.

6. Journal of the American Statistical Association, Papers and Proceedings, March, 1928, p. 146.
7. The Annalist, September 24, 1926, p. 395.

What else could account for the fabulous fact that something like 20,000,000 out of some 25,000,000 families in the United States now own automobiles, the great bulk of them, of course, moderate-priced cars? And it may be added that, in turn, a large part of this 70 to 80 per cent of the population are nowadays not merely buyers of direct consumables, and of automobiles, but likewise of houses, real estate, stocks and bonds, or else, in the cities, payers of extravagant rents which often run to from 20 to 30 per cent, or even more, of their incomes. It would seem, therefore, that any "general" index of prices of total consumables, would include all of these various factors.

3. So, also, with the question of a standard of deferred payments, or measure of the general value of money. In the long run it seems clear that most types of prices, tho not of particular products, tend to maintain a fairly close relationship, at least in peaceful times. Thus it is a noteworthy finding that over decennial periods, at least, the average price of wheat [8] appears to have maintained a pretty constant ratio to the average of all commodities through nearly four hundred years. And, in turn, commodity prices as a whole may for extended periods, run closely with other types of price indexes, like wages and the cost of living, as appears from the results of Douglas,[9] and Rubinow.[1] Real estate values naturally show a long-time or secular appreciation, from the growth of population; and so, also, for a different reason, do values of common stocks. But both of these, in their long-time trends, appear to be far more deeply affected by changes in the value of money.

In a period of such radical debasement of the currency of exchange as during and since the World War, the dispersion between different types of prices is often extreme, and the difficulty of computing a general average of all types of prices correspondingly great. But, as I have endeavored to show,[2]

8. C. F. Elmes, Appraisals and Rate Making. Chicago, 1919.
9. American Econ. Rev. Proc., March Supp., 1926, p. 17.
1. Ibid., iv, 793.
2. "The Measure of the General Price Level," Review of Economic Statistics, February, 1928.

we have for such a broad composite some test of accuracy or trustworthiness, such as is possessed by no other type of price index, and most distinctly not by the particular type (commodity prices at wholesale) still widely accepted by some of our most distinguished economists as a measure of the general price level.

From measures of total payments, as reflected in bank debits, we may construct a theoretical General Price Level which corresponds closely with our measures of the General Price Level; and the validity of bank debits as a measure of total transactions seems now established from their close relation with the gross income reported by the 400,000 or more corporations which now represents two thirds, or more, of the total income of all business of the country.

4. When, therefore, direct and, in a sense, verifiable measures of average expenditure are thus obtainable, I can see little force in Dr. Haberler's criticism that such an index of the General Price Level is "correlated neither with the commodity nor the labor standard." There seems little reason why such a general average should, in a period like the present, and after war and inflation upheavals in general, correspond to either of these "standards."

This Department has devised a broad composite of every type of wage available;[3] and that composite stands now at around 222, base of 1913, or, roughly, 30 per cent above the computed General Price Level, and nearly 50 per cent above, for example, the Bureau of Labor Statistics average for commodity prices at wholesale. On the other hand, this latter index, of commodity prices, has recently averaged about 25 points below the General Price Level, or around 15 per cent. Such is the wide dispersion of types of prices at the present time.

Nor is this condition peculiar to the United States. It is a somewhat extraordinary fact that the index numbers in Sweden for commodity prices, cost of living, and the average

3. Carl Snyder, "A New Composite Index of Wages in the United States," Journal of the American Statistical Association, December, 1926.

of wage payments, show almost the same relations as those of the United States, that is, commodity prices are currently 50 per cent, the cost of living about 70 per cent, and average wages about 160 per cent,[4] above pre-war. Imagining that the extraordinary rise in wages in this country is something peculiar to our industrial organization, and aided by writers of great imagination, we have floated into a dream of marvelous efficiency achieved by this country alone, forgetful that the same rise in wages came after the inflation of our Civil War, and ignorant of the fact that the same thing has been happening in other countries less boastful than ourselves.

Equally little force, it seems to me, lies in the supposed objection that wages should not be included in an index of the general price level. This objection might lie against such an inclusion in an index of commodity prices alone, as Walsh has ably argued; and especially so long as we think of commodity prices exactly as such, and nothing more, not as good indexes of wholesale prices in general, and still less as an index of "general prices," as nine out of ten economists continue to use them.

The practical justification for the inclusion of wages in our index of the general price level is simply the inadequacy of data as to the prices of manufactured and directly consumable goods, either at retail or at wholesale. If we continue to develop such indexes of finished goods, then we may in time be able to split our familiar commodity indexes into indexes of basic products and of fabricated goods — a high desideratum in view of the present confused thinking upon these subjects. When we have enough of these indexes, then it will be no longer necessary, tho perhaps still advisable, to include wage averages in an endeavor to attain a true index of the general price level.[5] But it still should not be forgotten that possibly

4. Akerman: "Development of Wages in Swedish Industry," Ekonomisk Tidskrift, Upsala, 1927, No. 2.

5. Cf., the view of F. Y. Edgeworth:

"For distant epochs perhaps special importance might be attached to the price of common labour, general wages . . . partly upon the ground (indicated by Cairnes) that there is a certain interdependence between the price of labour and the price of subsistence, and partly on the ground

a third of our national expenditure goes for wages, salaries, and personal services, a very considerable part of which is for doctors, lawyers, governmental and public employees of all sorts, taxi-drivers, domestic service, and the like, the cost of which does not directly affect the prices of commodities, or rents, or securities, or land.

5. Finally, as to measures of price stability, and guides to monetary and credit policy, is it not clear enough now that, in our complex modern economic state, we can no longer consider these questions in the narrow terms of a "wage dollar," or a "commodity dollar," any more than, it seems to me, we could think merely of a "farmers' dollar," or a "dentists' dollar," or the picturesque invention of a former day, termed a "trade dollar." For the rest, it seems to the writer that the construction of a broad index of the General Price Level presents no *greater* difficulties than are actually to be found in our current measures, either of commodity prices, or cost of living, wages, securities, real estate, and the like. None of these are perfect as a lily.

In any event it seems clear that either the one or the other, the general price index or special price indexes, are distinctly practical and technical problems, rather than for finely spun theory or unattainable and perhaps useless ideals.

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that the price of labour seems to occupy a mean between the price of (most of) the articles which obey the law of diminishing returns and the price of those which have the opposite tendency."—"Method of Ascertaining a Change in the Value of Gold," Journal of the Royal Statistical Society, December, 1883, p. 718.

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